BERKELEY CITY COUNCIL FACILITIES, INFRASTRUCTURE, TRANSPORTATION, ENVIRONMENT & SUSTAINABILITY COMMITTEE REGULAR MEETING

Wednesday, May 15, 2024
2:00 PM

2180 Milvia Street, 6th Floor - Redwood Room

Committee Members:

Councilmembers Terry Taplin, Mark Humbert, and Cecilia Lunaparra
Alternate: Vacant

This meeting will be conducted in a hybrid model with both in-person attendance and virtual participation. If you are feeling sick, please do not attend the meeting in person.

Remote participation by the public is available through Zoom. To access the meeting remotely using the internet: Join from a PC, Mac, iPad, iPhone, or Android device: Use URL https://cityofberkeley-info.zoomgov.com/j/1602195838. To request to speak, use the "raise hand" icon on the screen. To join by phone: Dial **1-669-254-5252 or 1-833-568-8864 (Toll Free)** and Enter Meeting ID: **160 219 5838**. If you wish to comment during the public comment portion of the agenda, press *9 and wait to be recognized by the Chair. Please be mindful that the meeting will be recorded.

To submit a written communication for the Committee's consideration and inclusion in the public record, email policycommittee@berkeleyca.gov.

Written communications submitted by mail or e-mail to the Facilities, Infrastructure, Transportation, Environment & Sustainability Committee by 5:00 p.m. the Friday before the Committee meeting will be distributed to the members of the Committee in advance of the meeting and retained as part of the official record.

Pursuant to the City Council Rules of Procedure and State Law, the presiding officer may remove, or cause the removal of, an individual for disrupting the meeting. Prior to removing an individual, the presiding officer shall warn the individual that their behavior is disrupting the meeting and that their failure to cease their behavior may result in their removal. The presiding officer may then remove the individual if they do not promptly cease their disruptive behavior. "Disrupting" means engaging in behavior during a meeting of a legislative body that actually disrupts, disturbs, impedes, or renders infeasible the orderly conduct of the meeting and includes, but is not limited to, a failure to comply with reasonable and lawful regulations adopted by a legislative body, or engaging in behavior that constitutes use of force or a true threat of force.

AGENDA

Roll Call

Public Comment on Non-Agenda Matters

Election of Chairperson

Minutes for Approval

Draft minutes for the Committee's consideration and approval.

1. Minutes - November 15, 2023

Committee Action Items

The public may comment on each item listed on the agenda for action as the item is taken up. The Chair will determine the number of persons interested in speaking on each item. Up to ten (10) speakers may speak for two minutes. If there are more than ten persons interested in speaking, the Chair may limit the public comment for all speakers to one minute per speaker. Speakers are permitted to yield their time to one other speaker, however no one speaker shall have more than four minutes.

Following review and discussion of the items listed below, the Committee may continue an item to a future committee meeting, or refer the item to the City Council.

2. Adopt an Ordinance Adding a New Chapter 12.01 to the Berkeley Municipal Code Establishing Emergency Greenhouse Gas Limits, Process for Updated Climate Action Plan, Monitoring, Evaluation, Reporting and Regional Collaboration
From: Councilmember Harrison (Author), Councilmember Bartlett (Co-Sponsor) and Councilmember Hahn (Co-Sponsor)
Referred: November 15, 2021
Due: May 17, 2024
Recommendation:
1. Adopt an ordinance adding a new Chapter 12.01 to the Berkeley Municipal Code (BMC) establishing Emergency Greenhouse Gas Limits with an effective date of [ ], 2022.
2. Refer to the FY23-24 Budget Process $[ ] consistent with implementing the requirements of Sections 12.01.040, 12.01.050, 12.01.060.
Financial Implications: See report
Contact: Kate Harrison, Councilmember, District 4, (510) 981-7140

3. Discussion Item: Progress on the Bike and Pedestrian Plans
From: Councilmember Harrison (Author)
Contact: Kate Harrison, Councilmember, District 4, (510) 981-7140

4. Discussion Item: Train Quiet Zones in West Berkeley
From: Councilmember Taplin (Author)
Contact: Terry Taplin, Councilmember, District 2, (510) 981-7120

Committee Action Items

5. Referral to Develop Curb Management Plan
From: Environment and Climate Commission
Referred Date: February 26, 2024
Due Date: October 9, 2024
Recommendation: Refer to the City Manager to fund and develop a Curb Management Plan.
Financial Implications: See report
Contact: Sarah Moore, Commission Secretary, (510) 981-7400

6. Street Rehabilitation Five Year Plan for Fiscal Years 2024-2028
From: City Manager
Referred: November 28, 2023
Due: May 27, 2024
Recommendation: ****On November 28, 2023, the City Council referred the green infrastructure needs and the issues and criteria for the segments on the Holdover List to the Facilities Infrastructure Transportation Environment and Sustainability Committee for review and discussion.****
Financial Implications: See report
Contact: Terrance Davis, Public Works, (510) 981-6300

7. EVITP (Electric Vehicle Infrastructure Training Program) Ordinance
From: Councilmember Bartlett (Author)
Referred: April 25, 2024
Due: October 2, 2024
Recommendation: That the Berkeley Mayor and Members of City Council establish an EVITP (Electric Vehicle Infrastructure Training Program) ordinance to address increasing safety and fire concerns. The ordinance would require 50% of electricians per job installing and maintaining city-funded EVSE (Electric Vehicle Supply Equipment) equipment and infrastructure to be certified by EVITP.
Financial Implications: See report
Contact: Ben Bartlett, Councilmember, District 3, (510) 981-7130

Unscheduled Items

These items are not scheduled for discussion or action at this meeting. The Committee may schedule these items to the Action Calendar of a future Committee meeting.

- **None**

Items for Future Agendas

- **Requests by Committee Members to add items to the next agenda**

Adjournment

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Written communications addressed to the Facilities, Infrastructure, Transportation, Environment & Sustainability Committee and submitted to the City Clerk Department will be distributed to the Committee prior to the meeting.

This meeting will be conducted in accordance with the Brown Act, Government Code Section 54953 and applicable Executive Orders as issued by the Governor that are currently in effect. Members of the City Council who are not members of the standing committee may attend a standing committee meeting even if it results in a quorum being present, provided that the non-members only act as observers and do not participate in the meeting. If only one member of the Council who is not a member of the committee is present for the meeting, the member may participate in the meeting because less than a quorum of the full Council is present. Any member of the public may attend this meeting. Questions regarding public participation may be addressed to the City Clerk Department (510) 981-6900.

COMMUNICATION ACCESS INFORMATION:
This meeting is being held in a wheelchair accessible location. To request a disability-related accommodation(s) to participate in the meeting, including auxiliary aids or services, please contact the Disability Services specialist at (510) 981-6418 (V) or (510) 981-6347 (TDD) at least three business days before the meeting date. Attendees at public meetings are reminded that other attendees may be sensitive to various scents, whether natural or manufactured, in products and materials. Please help the City respect these needs.

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I hereby certify that the agenda for this meeting of the Standing Committee of the Berkeley City Council was posted at the display case located near the walkway in front of the Maudelle Shirek Building, 2134 Martin Luther King Jr. Way, as well as on the City's website, on May 9, 2024.

Mark Numainville, City Clerk

Communications

Communications submitted to City Council Policy Committees are on file in the City Clerk Department at 2180 Milvia Street, 1st Floor, Berkeley, CA, and are available upon request by contacting the City Clerk Department at (510) 981-6908 or policycommittee@berkeleyca.gov.

01

BERKELEY CITY COUNCIL FACILITIES, INFRASTRUCTURE, TRANSPORTATION, ENVIRONMENT & SUSTAINABILITY COMMITTEE REGULAR MEETING MINUTES

Wednesday, November 15, 2023
2:00 PM

2180 Milvia Street, 6th Floor - Redwood Room

Committee Members:

Councilmembers Terry Taplin, Kate Harrison, and Rigel Robinson
Alternate: Councilmember Mark Humbert

This meeting will be conducted in a hybrid model with both in-person attendance and virtual participation. If you are feeling sick, please do not attend the meeting in person.

Remote participation by the public is available through Zoom. To access the meeting remotely using the internet: Join from a PC, Mac, iPad, iPhone, or Android device: Use URL https://cityofberkeley-info.zoomgov.com/j/1604033673. To request to speak, use the "raise hand" icon on the screen. To join by phone: Dial **1-669-254-5252 or 1-833-568-8864 (Toll Free)** and Enter Meeting ID: **160 403 3673**. If you wish to comment during the public comment portion of the agenda, press *9 and wait to be recognized by the Chair. Please be mindful that the meeting will be recorded.

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MINUTES

Roll Call: 2:10 p.m.

Present: Councilmembers Taplin, Robinson, and Harrison.

Public Comment on Non-Agenda Matters: 2 speakers.

Minutes for Approval

Draft minutes for the Committee's consideration and approval.

1. Minutes - November 1, 2023
Action: M/S/C (Robinson/Taplin) to approve the November 1, 2023 minutes.
Vote: All Ayes.

Committee Action Items

The public may comment on each item listed on the agenda for action as the item is taken up. The Chair will determine the number of persons interested in speaking on each item. Up to ten (10) speakers may speak for two minutes. If there are more than ten persons interested in speaking, the Chair may limit the public comment for all speakers to one minute per speaker. Speakers are permitted to yield their time to one other speaker, however no one speaker shall have more than four minutes.

Following review and discussion of the items listed below, the Committee may continue an item to a future committee meeting, or refer the item to the City Council.

Committee Action Items

2. Modernizing and updating outdated & unnecessary language in the BMC related to transportation
From: Councilmember Robinson (Author)
Referred Date: October 23, 2023
Due Date: April 21, 2024
Recommendation: Refer to the City Manager to modernize and update outdated and unnecessary language in the BMC related to transportation to align with new state laws and promote a more equitable transportation system. Proposed amendments should be brought to the Transportation & Infrastructure Commission, Disability Commission, and Commission on Aging for review and feedback. Staff should consider the following draft amendments to BMC Chapters 6.32, 14.32, and 14.68:
1. Rescind outdated or unnecessary regulations pertaining to jaywalking, skateboarding, bicycle licenses, and bicycle establishment requirements;
2. Allow 24/7 use of public paths by pedestrians and bicyclists for the purpose of transportation;
3. Allow bicyclists on non-electric bicycles to ride on the sidewalk while exercising due care and yielding right-of-way to pedestrians when no Class I, Class II, or Class IV bicycle facility is available;
4. Align the penalty for bicycle violations with other moving violations by amending it from a misdemeanor to an infraction; 5. Update definitions of bicycles and scooters to align with definitions in the California Vehicle Code.
Financial Implications: See report
Contact: Rigel Robinson, Councilmember, District 7, (510) 981-7170
Action: 5 speakers. Presentation made and discussion held. Item continued to a future meeting.

3. Discussion Item: Calm Traffic in West Berkeley to Protect Children
From: Councilmember Harrison (Author)
Contact: Kate Harrison, Councilmember, District 4, (510) 981-7140
Action: 6 speakers. Discussion held. Item continued to a future meeting.

4. Discussion Item: Progress on the Bike and Pedestrian Plans
From: Councilmember Harrison (Author)
Contact: Kate Harrison, Councilmember, District 4, (510) 981-7140
Action: Item continued to a future meeting.

Unscheduled Items

These items are not scheduled for discussion or action at this meeting. The Committee may schedule these items to the Action Calendar of a future Committee meeting.

5. **Adopt an Ordinance Adding a New Chapter 12.01 to the Berkeley Municipal Code Establishing Emergency Greenhouse Gas Limits, Process for Updated Climate Action Plan, Monitoring, Evaluation, Reporting and Regional Collaboration**
   From: Councilmember Harrison (Author), Councilmember Bartlett (Co-Sponsor) and Councilmember Hahn (Co-Sponsor)
   Referred: November 15, 2021
   Due: December 31, 2023
   Recommendation: 1. Adopt an ordinance adding a new Chapter 12.01 to the Berkeley Municipal Code (BMC) establishing Emergency Greenhouse Gas Limits with an effective date of [ ], 2022.
   2. Refer to the FY23-24 Budget Process $[ ] consistent with implementing the requirements of Sections 12.01.040, 12.01.050, 12.01.060.
   Financial Implications: See report
   Contact: Kate Harrison, Councilmember, District 4, (510) 981-7140

Items for Future Agendas

- None

Adjournment

Action: M/S/C (Taplin/Robinson) to adjourn the meeting.
Vote: All Ayes.

Adjourned at 4:22 p.m.

I hereby certify that the foregoing is a true and correct record of the Facilities, Infrastructure, Transportation, Environment & Sustainability Committee meeting held on November 15, 2023.

_____
Denise Burgara, Assistant City Clerk

Communications

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02

Kate Harrison
Councilmember District 4

ACTION CALENDAR
November 30, 2021

To: Honorable Mayor and Members of the City Council

From: Councilmember Harrison

Subject: Adopt an Ordinance Adding a New Chapter 12.01 to the Berkeley Municipal Code Establishing Emergency Greenhouse Gas Limits, Process for Updated Climate Action Plan, Monitoring, Evaluation, Reporting and Regional Collaboration

RECOMMENDATION

1. Adopt an ordinance adding a new Chapter 12.01 to the Berkeley Municipal Code (BMC) establishing Emergency Greenhouse Gas Limits with an effective date of [ ], 2022.

2. Refer to the FY23-24 Budget Process $[ ] consistent with implementing the requirements of Sections 12.01.040, 12.01.050, 12.01.060.

CURRENT SITUATION, EFFECTS, AND RATIONALE FOR RECOMMENDATION

Scientific evidence indicates that between the industrial period of 1850 and 2021, economic systems, namely state and free-market forms of capital accumulation and economic growth have increased global atmospheric carbon dioxide levels to a staggering 418 parts per million (ppm), beyond the established planetary boundary of 350 ppm, and warmed global average temperature by approximately 1.1 degrees Celsius. Available scientific evidence indicates there is no 'safe' level of warming beyond 350 ppm, only gradations of risk with respect to habitability.

Berkeley is already experiencing unprecedented negative effects of warming associated with 1 degree of warming, and current global growth trends and policies could push humanity past 1.5 degrees by mid-century, leading to a devastating 2-4 degrees by the end of the century. The 'Global North,' which includes Berkeley, has far exceeded its fair share of the emissions comprising and exceeding the boundary, and must reduce its emissions rapidly and justly.

2180 Milvia Street, Berkeley, CA 94704 ● Tel: (510) 981-7140 ● TDD: (510) 981-6903 ● Fax: (510) 981-6903 E-Mail: KHarrison@cityofberkeley.info

The City of Berkeley has engaged with the issue of global warming for at least three decades and has unquestionably been a leader in certain climate actions. Yet, in light of the current gravity of the climate emergency, current strategies and targets are not adequate. Exceptionally risky "mitigation" strategies, namely midcentury 'net-zero' pledges have provided for unbridled economic and emissions growth and thus severely dwindled carbon budgets, effectively rendering Berkeley's gradual reduction goals: 80% by 2050 (Measure G, 2005 and Resolution 64,480-N.S., 2009) and net-zero by 2045 (Resolution 69,852–N.S., 2021), untenable. The majority of risk associated with each additional ton of greenhouse gas emitted will be borne by generations who will have not consented to current reduction goals and strategies. Current policies could exacerbate or lead to exceedingly dangerous new tipping points.

This item is timely in light of ongoing reports that national "pledges" under Paris Agreement could lead to at least 3 degrees of catastrophic warming, the inability for Congress to pass meaningful domestic and international climate policies and legislation, and the failure of world leaders to reach an effective and substantive agreement at the 26th UN Climate Change Conference of the Parties (COP26) in Glasgow.

BACKGROUND

The ordinance establishes emergency greenhouse gas limits aimed at reducing sector-based greenhouse gas emissions 90% below 2000 levels and consumption-based emissions 90% below 2013 levels by 2030. These limits would bring Berkeley closer to its global 'fair share' and science-based reduction obligations, and could help achieve reductions at scale as part of a program of regional coordination and collaboration.

While such targets are ambitious, mitigating and minimizing global warming risk and maximizing adaptation, resilience and adherence to planetary boundaries earlier in the century rather than later will likely result in less disruption to society over the long term, and will generate opportunities for more inclusive and sound democratic decision making as compared to waiting until atmospheric carbon levels reach increasingly catastrophic levels.

These limits are consistent with the City's 2006 "precautionary principle" established by BMC 12.29, and which states:

> "The purpose of this chapter is to promote the health, safety, and general welfare of the community by minimizing health risks, improving air quality, protecting the quality of ground and surface water, minimizing consumption of resources, and minimizing the City' s contribution to global climate change by implementing in a phased manner, as provided in this chapter, the City's use of a precautionary principle approach in its decisions."

As enacted by Council, BMC 12.29 requires the City to apply the following precautionary principle tenets in the course of action and decision-making:

1. Anticipatory Action: Anticipatory action may prevent harm. Government, business, community groups, and the public share this responsibility.

2. Right to Know: The community has a right to know complete and accurate information on potential health and environmental impacts associated with the selection of products, services, operations or plans.

3. Alternatives Assessment: Examine a full range of alternatives and select the alternative with the least potential impact on health and the environment including the alternative of doing nothing.

4. Consideration of Significant Costs: Consider significant short-term and long-term costs in comparing product alternatives, when feasible. This includes evaluation of significant costs expected during the lifetime of a product, (e.g. raw materials, manufacturing and production, transportation, use, clean-up, acquisition, extended warranties, operation, supplies, maintenance, disposal costs, long and short-term environmental and health impacts); and that expected lifetime compared to other alternatives.

5. Participatory Decision Process: Decisions applying the Precautionary Principle should be transparent, participatory by including community input, and informed by the best available information.

The ordinance requires the City to develop a new Climate Action Plan and consistent with these GHG limits and precautionary principle tenets, and to establish relevant legislative and budgetary timelines to help the City reach its objectives.

In addition, the ordinance requires the City to consider post-growth climate mitigation strategies and policies as potential alternatives to the growth and market-based and other policies that created the crisis and remain a persistent obstacle to meaningful action. The City's policies and programs *must not* aim to merely increase economic growth for growth's sake, but rather to support the provision of basic human needs and happiness.

It also provides an institutional framework to build solidarity with neighboring Bay Area communities and jurisdictions to achieve collective limits that could change rate of global warming while simultaneously providing sister cities in other countries precious time to improve living standards and pursue decarbonization.

ENVIRONMENTAL SUSTAINABILITY

This item is consistent with the latest climate science and the precautionary principle established by BMC 12.29.

ATTACHMENTS

1. Proposed Ordinance adding a new Chapter 12.01.

FINANCIAL IMPLICATIONS

Staff time will be necessary to implement the new ordinance. This item refers $[ ] to the FY23-24 Budget Process consistent with implementing the requirements of Sections 12.01.040, 12.01.050, 12.01.060.

CONTACT PERSON

Councilmember Kate Harrison, Council District 4, (510) 981-7140

ORDINANCE NO. –N.S.

ADDING CHAPTER 12.01 TO THE BERKELEY MUNICIPAL CODE TO ESTABLISH EMERGENCY GREENHOUSE GAS EMISSIONS LIMITS

BE IT ORDAINED by the Council of the City of Berkeley as follows:

Section 1. That Chapter 12.01 of the Berkeley Municipal Code is added to read as follows:

Chapter 12.01

EMERGENCY GREENHOUSE GAS EMISSIONS LIMITS

Sections:

12.01.010 Findings and purpose.

The Council of the City of Berkeley finds and declares as follows:

A. Available scientific evidence indicates that between the industrial period of 1850 and 2021 economic systems, namely state and free-market forms of capital accumulation and economic growth, have increased global atmospheric carbon dioxide levels to a staggering 418 parts per million (ppm) beyond the established planetary boundary of 350 ppm, and warmed global average temperature by approximately 1.1 degrees Celsius. The 'Global North,' which includes Berkeley, has far exceeded its fair share the emissions comprising and exceeding the boundary, and must reduce its emissions rapidly and equitably.

B. Available scientific evidence indicates there is no 'safe' level of warming beyond 350 ppm, only gradations of risk with respect to habitability. Berkeley, California, the United States, and the world is already experiencing unprecedented negative effects of warming associated with 1 degree of warming, and current global growth trends and policies will push humanity past 1.5 degrees as early as the 2030s and 3 to 4 degrees by the end of the century. Global warming between 1.5 to 2 degrees Celsius is expected to further accelerate existential risks to health and safety including but not limited to, extreme weather, mass extinction, water and food shortages, violent conflict, fire, forced migration, economic collapse, disease, heat stress, and sea level rise. The majority of risk associated with each additional ton of greenhouse gas emitted will be borne by generations who will have not consented to current reduction strategies.

C. In the twenty-first century, Berkeley, California, and the United States have largely and irresponsibly relied on ineffective market-based mechanisms, unrealistic expectations of absolutely decoupling GDP growth from energy use, speculative mass deployment of negative emission reduction technologies and 'net-zero' practices to offset continued fossil fuel production and consumption, and underappreciation of irreversible tipping points, aerosol masking, and non-carbon greenhouse gasses. In light of the current gravity of the climate emergency, these strategies have unequivocally failed; between Measure G and 2018, each jurisdiction only reduced greenhouse gasses by a respective 10%, 12%, and 26%, while at the same time globally, nearly a third of all anthropogenic carbon dioxide was emitted. Exceptionally risky strategies pursued by the Global North, namely midcentury 'net-zero' pledges have provided for unbridled economic and emissions growth and thus severely dwindled carbon budgets, effectively rendering Berkeley's gradual reduction goals: 80% by 2050 (Measure G, 2005 and Resolution 64,480-N.S., 2009) and net-zero by 2045 (Resolution 69,852–N.S., 2021), untenable.

D. It is the intent of the Council to adopt stringent and equitable science-based greenhouse gas emissions limits and related action plans and reports, consistent with the precautionary principle approach established by Chapter 12.29, for the purpose of achieving the rapid, far-reaching, unprecedented and just changes in all aspects of society associated with mitigating and minimizing global warming risk and maximizing adaptation, resilience and adherence to planetary boundaries.

E. The Council further intends to endeavor to build solidarity with neighboring communities and jurisdictions to achieve collective limits that could change rate of global warming while simultaneously providing sister cities in other countries precious time to improve living standards and pursue decarbonization.

12.01.020 Definitions.

A. "Climate Action Plan" means the document required under Section 12.01 outlining the specific actions the City will endeavor to take to reduce Greenhouse gas emissions and to mitigation, resilience and adaptation efforts with respect to climate impacts.

B. “Consumption-Based Greenhouse Gas Emissions” means all the Greenhouse Gas emissions associated with producing, transporting, using, and disposing of products and services consumed by a particular community or entity in a given time period, including emissions generated outside the boundaries of the community or the geographic area where the entity is located.

C. “Greenhouse Gas” means any and all of the following gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride.

D. “Sector-Based Greenhouse Gas Emissions” means all of the Greenhouse Gas emissions generated within the geographic boundaries of the City in a given time period.

E. “Responsible Production and Consumption” means improving how materials and products are extracted, manufactured, delivered, acquired, used, reused, recycled, and disposed of to ensure that the production and consumption of materials and products promote basic human needs, are distributed in a socially equitable manner, and carried out in a way that minimizes environmental impacts over the lifecycle of those materials and products while matching the carrying capacity of the earth’s resources and adding value so as not to jeopardize present and future generations. “Lifecycle” means the complete material life of a product, good, or service, including resource extraction, manufacture, assembly, construction, maintenance, transportation, operations or use, and end of life (reuse, recycling/composting, and disposal). “Carrying capacity” means the number or amount of people, plants, and other living organisms that an ecosystem can support indefinitely without causing environmental degradation.

F. “Post-Growth Emissions Mitigation” means Greenhouse Gas mitigation strategies and policies that acknowledge and support the following:

(1) rapid emissions reductions may not be compatible with economic policies that support limitless growth, especially growth in the production and consumption of commodities that do not support basic human needs,

(2) in jurisdictions with high aggregate wealth there may be a disassociation between additional capital accumulation, economic growth, and GDP, and key social outcomes, to include but not limited to, health, social wellbeing, happiness and equity,

(3) fairer distribution of income and wealth, and guaranteed access to universal public services.

12.01.030 Emergency Greenhouse Gas Emissions Limits.

A. The following Greenhouse Gas emissions limits are hereby established:

(1) By 2030, reduce Sector-Based Greenhouse Gas Emissions [90%] below 2000 levels.

(2) By 2030, reduce Consumption-Based Greenhouse Gas Emissions to [5] mtCO2e per household or less, equivalent to a [90%] reduction compared to 2013 levels.

(3) By 2026, the Council shall determine an appropriate deadline for achieving 100% zero emissions across both Sector and Consumption-Based inventories.

12.01.040 Climate Action Plan.

A. By [ ], 2022, the City Manager or designee shall prepare and submit for relevant Council policy committee and Council approval a Climate Action Plan (CAP) which shall

do all of the following:
(1) Align with the emissions limits established in Section 12.01.030.
(2) Consider equitable Post-growth Climate Mitigation strategies and policies.
(3) Incorporate an equity framework that addresses historic racial, class-based, and social inequalities; prioritizes social, economic, and environmental benefits derived from implementing the CAP; and ensures an equitable distribution of those benefits. This framework shall consider:
(a) The engagement and prioritization of those who are most impacted by climate change and have historically had the least influence in decision-making processes, including low-income communities of color, communities with disabilities, and other impacted populations;
(b) Burdens and/or unintended consequences of related actions, especially for low-income communities of color, communities with disabilities, and other vulnerable populations; and
(c) Social interventions needed to secure workers' rights and livelihoods when economies are shifting to responsible production and consumption, collectively referred to as a “just transition” framework, and other impacts on workforce and job opportunities.
(4) Include, but not be limited to, the following elements: energy supply; transportation and land use; building operations; housing; Responsible Production and Consumption; carbon sequestration and water conservation.
(5) Identify strategies and/or make recommendations to achieve emissions limits for all elements. The CAP shall recommend approaches on goals and principles. Each strategy or recommendation shall:
(a) Identify parties responsible for implementation;
(b) Incorporate an estimated cost; and
(c) Incorporate estimated legislative and budgetary timelines based consistent with Section 12.01.030; and
(d) Contain key performance indicators and explicit equity metrics to measure progress.
B. The City Manager or their designee shall update the Climate Action Plan at least every two years.

12.01.050 Monitoring, Evaluation, And Reporting.
A. The City shall demonstrate its long-term commitment to reducing Greenhouse Gas emissions and advancing racial and social equity by measuring and reporting emissions, tracking key performance indicators and equity metrics, and monitoring the City’s progress on meeting its climate action goals and commitments.
B. The City Manager or their designee shall, with the assistance from relevant City agencies:
(1) Measure and monitor Sector-Based Greenhouse Gas Emissions, including municipal emissions, using best available global protocols for preparing Citywide Greenhouse Gas emission inventories.
(2) Measure production and consumption emissions using best available global methodologies for preparing consumption-based emission inventories.
(3) Evaluate Sector-Based Greenhouse Gas Emissions against set limits, document production and consumption emissions, and produce an annual Greenhouse Gas emissions report.
(4) Establish a monitoring and reporting process for the implementation of the CAP that:
(a) Tracks key performance indicators and equity metrics for strategies to help

monitor their progress and implementation;
(5) Request and receive data from City departments to support:
(a) The annual Greenhouse Gas emissions inventory. City departments may be asked to provide data on, but not limited to, the following: their energy use; types of fuels used for their operations; fuel volume; vehicle-miles travelled (if applicable) within their jurisdictions; and private sector Greenhouse Gas emission sources regulated by the department. Departments may also be requested to verify emission estimates and assumptions and review resulting reports;
(b) Monitoring and reporting of Climate Action Plan implementation. City departments may be asked to provide data on key performance indicators and equity metrics related to adopted strategies and actions; and
(6) Coordinate with other City agencies to monitor, track, and report on climate action progress to local, state, national, and global partners.
(7) Report its findings in a progress report to the Council and public every year.
(8) Report on at least a biannual basis to relevant Council policy committees and commissions to support policy and budget development consistent with reduction limits established in Section 12.01.030.

12.01.060 Regional Collaboration.
The Council and City staff, working alongside the public, shall endeavor to build solidarity and coalitions with neighboring communities, jurisdictions, and agencies to achieve equitable collective Greenhouse Gas limits and observe planetary boundaries.

11.63.070 Severability.
If any word, phrase, sentence, part, section, subsection, or other portion of this Chapter, or any application thereof to any person or circumstance is declared void, unconstitutional, or invalid for any reason, then such word, phrase, sentence, part, section, subsection, or other portion, or the prescribed application thereof, shall be severable, and the remaining provisions of this Chapter, and all applications thereof, not having been declared void, unconstitutional or invalid, shall remain in full force and effect. The City Council hereby declares that it would have passed this title, and each section, subsection, sentence, clause and phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases had been declared invalid or unconstitutional.

12.01.080 Construction.
This Chapter is intended to be a proper exercise of the City's police power, to operate only upon its own officers, agents, employees and facilities and other persons acting within its boundaries, and not to regulate inter-city or interstate commerce. It shall be construed in accordance with that intent.

12.01.090 Effective date.
The provisions in this ordinance are effective [ ], 2022.

Section 2. Copies of this Ordinance shall be posted for two days prior to adoption in the display case located near the walkway in front of the Maudelle Shirek Building, 2134 Martin Luther King Jr. Way. Within 15 days of adoption, copies of this Ordinance shall be

filed at each branch of the Berkeley Public Library and the title shall be published in a newspaper of general circulation.

03

There is no material for this item.

City Clerk Department
2180 Milvia Street
Berkeley, CA 94704
(510) 981-6900

The City of Berkeley Facilities, Infrastructure, Transportation, Environment & Sustainability Policy Committee Webpage:
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Attachment 2
Quiet Zone Feasibility Study Report

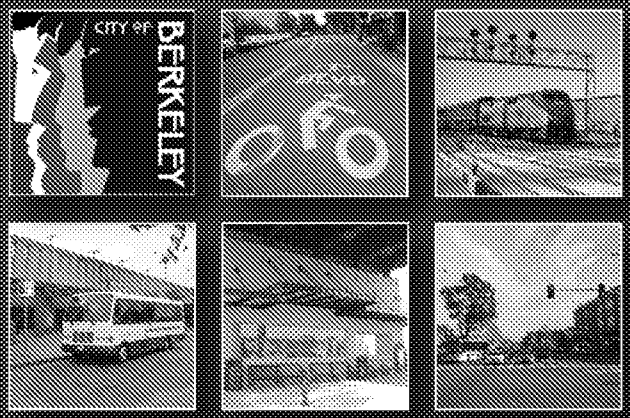
04

City of Berkeley
Railroad Quiet Zone Study

Final Report

Prepared for the City of Berkeley

April 13, 2009



City of Berkeley
Railroad Quiet Zone Study

Final Report

WilburSmith
ASSOCIATES

Adavant Consulting

April 13, 2009

EXECUTIVE SUMMARY

The purpose of the Berkeley Railroad Quiet Zone Study is to explore the potential for implementation of a Quiet Zone on the Union Pacific Railroad (UP) corridor through the City of Berkeley. This assessment looked at existing and future conditions for the Berkeley rail corridor, identified potential Quiet Zone improvements, evaluated the performance of Quiet Zone scenarios and presented an outline of next steps for implementing a Quiet Zone.

The following findings and recommendations resulted from the Berkeley Quiet Zone Study.

- According to federal regulations, trains are required to blow their horns as they approach at-grade crossings with roadways. The horn sounding is a safety measure to alert motorists and pedestrians intending to cross the tracks that a train is approaching.
- Seven at grade crossings are located in the Berkeley corridor including (from north to south) Gilman Street, Camelia Street, Cedar Street, Virginia Street, Hearst Avenue, Addison Street and Bancroft Way.
- The Berkeley corridor carries both freight and passenger rail traffic with 74 trains per day sounding their horns ¼ mile prior to each of the seven crossings as required by federal safety regulations. In addition, horns are sounded by the 32 daily *Capitol Corridor* trains as they depart the Berkeley Station. Passenger trains operate from 4:40 am to 10:00 pm; UP and BNSF freight trains operate 24 hours a day.
- Another 30 freight and passenger trains could be added by 2030.
- Implementation of a Quiet Zone pursuant to federal standards could reduce up to 94% of existing soundings of train horns across the seven Berkeley railroad crossings. However, the 32 horn soundings from the *Capitol Corridor* trains departing the Berkeley Station and additional soundings at the engineer's discretion due to activity in the rail right-of-way would continue.
- Quiet Zone safety measures (SSM) include
  - Four-quadrant gates
  - Gates with medians or channelization devices, also known as traffic separators
  - One-way streets equipped with gates that fully block the street
  - Temporary closure (i.e., nighttime closure)
  - Permanent closure (including grade separation)
- Wayside horns can be used as an alternative to the sounding of train horns. Wayside horns are installed at the crossing facing down the crossing street towards oncoming traffic on either side of the crossing; their sound is directional, concentrated on the approach. Wayside horns are not a Quiet Zone safety measure as horns are still sounded but can be used as a replacement to train horns.
- The safety risk with implementation of the Quiet Zone is estimated using the Federal Railroad Association's Quiet Zone Calculator. To qualify for Quiet Zone status, the corridor must have a risk level

below a national standard, employ SSMs at each crossing, or implement SSMs at some crossings to reduce the level of risk to an acceptable level.

- Assuming a grade separation at Gilman Street, the cost of potential improvements (2008 dollars) is estimated at $4.3 million to $8.9 million for Quiet Zone improvements at six the remaining crossings. The grade separation at Gilman Street, considered desirable for circulation and Quiet Zone improvements, is estimated at minimum cost of $20.2 million (2009 dollars). Transportation staff is endorsing further review of an under-crossing rather than an over-crossing option.
- Six Quiet Zone improvement scenarios were analyzed: For all scenarios, four–quadrant gates (estimated at a cost of $1.25M each) were recommended for Hearst Avenue, Addison Street, and Bancroft Way. Camelia and Virginia Streets were considered for four-quadrant gates, roadway closure ($50,000), or no change. Cedar Street was considered for a median ($25,000) or four–quadrant gates. Gilman Street was considered for a grade separation, wayside horns or four-quadrant gates in two different scenarios each.
- The lowest cost scenario included three installations of four-quadrant gates, a median at Cedar Street, no improvements at Camelia or Virginia Streets, and a wayside horn at Gilman Street. A modified median now under consideration at Addison Street will not qualify as an SSM for the Quiet Zone; but if the overall risk was lowered for the proposed Quiet Zone, this improvement might be allowable. Additional reporting or initial steps to qualify might be necessary.
- Current risk vs. national standard – Currently the national risk standard (a threshold Berkeley would ideally not exceed) is just 17,610 while Berkeley is with horns operating at a risk of 52,288. All analyzed scenarios can improve upon the Berkeley risk with horns (RWIH), and four of six analyzed scenarios reduce risk below the national standard (NSRT).
- Additional safety concerns. In addition each crossing has access issues that will require action pertaining to private property access as follows:
  - Gilman Street – Access to property with sole access from 3rd Street railroad right-of-way (ROW).
  - Camelia Street – Parking on the railroad ROW.
  - Cedar Street – Driveway within the safety gates.
  - Virginia Street - Parking on railroad ROW.
  - Hearst Avenue – Queuing at Truitt and White Lumber's driveway may back onto tracks, day laborers standing near the tracks may increase horn use and place laborers at risk.
  - Addison Street – Driveway within safety gates.
  - Bancroft Way – Driveway within safety gates.
- Partial Quiet Zones, Phased Quiet Zones, and wayside horns were all considered as alternatives to a complete Quiet Zone. With the exception of using a wayside horn as an interim strategy for Gilman Street, these other options were dismissed as inadequate given Berkeley's conditions, i.e. numerous adjacent crossings and continued night-time noise impacts.

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October 2017

RAILROAD SAFETY

Quiet Zone Analyses and Inspections Could Be Improved

GAO Highlights

Highlights of GAO-18-97, a report to congressional addressees

October 2017

RAILROAD SAFETY

Quiet Zone Analyses and Inspections Could Be Improved

Why GAO Did This Study

Accidents at grade crossings are a major source of fatalities in the railroad industry. FRA—the federal agency responsible for providing regulatory oversight of grade-crossing safety—issued regulations on the use of train horns in 2005. Railroads generally support sounding the horn, whereas, communities often support quiet zones to reduce noise.

Congress included a provision in statute for GAO to examine FRA's train horn regulations, including those on quiet zones. Among other things, this report: (1) describes benefits and costs of quiet zones, and (2) examines how FRA evaluates the effectiveness of its train horn regulations. GAO analyzed FRA's documentation on quiet zones, including FRA's train horn regulations and 2011 and 2013 studies on quiet zone safety; reviewed literature; and interviewed FRA program officials in headquarters, Grade Crossing Managers in FRA's 8 regions, and a nongeneralizable sample of another 32 stakeholders from 6 states, railroads, public authorities, and private industry consulting firms. State and public authorities were selected based on the number of quiet zones, geographic diversity, and FRA's recommendations.

What GAO Recommends

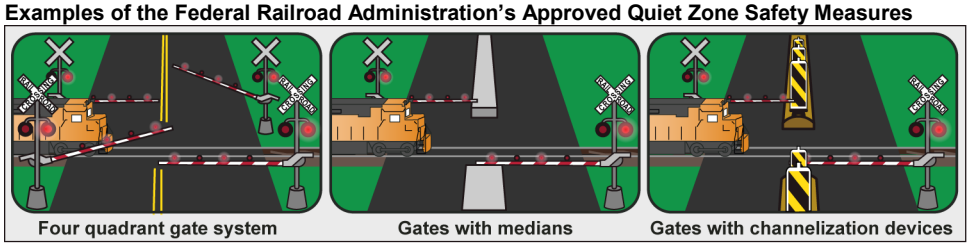
GAO recommends that FRA: (1) revise its methodology for analyzing the safety of quiet zones, and (2) develop guidance on conducting quiet zone inspections. The Department of Transportation partially concurred with the first recommendation, saying it would consider it, and fully concurred with the second. GAO continues to believe changes to the methodology are needed, as discussed in the report.

View GAO-18-97. For more information, contact Susan Fleming at (202) 512-2834 or flemings@gao.gov.

What GAO Found

GAO found that the benefits of quiet zones—i.e., highway-rail at-grade crossings (grade crossings) where train horns are not sounded—have not been quantified and that the costs to establish quiet zones vary. The Federal Railroad Administration's (FRA) train horn regulations allow public authorities (e.g., cities or towns) the opportunity to establish quiet zones if they install safety measures that reduce risks associated with the absence of the train horn (see fig.). While GAO did not identify any research that has quantified the benefits of quiet zones, most stakeholders GAO interviewed said that these quiet zones provide benefits to communities, such as reducing noise or increasing economic development. According to FRA guidance, the factors that affect the costs to establish quiet zones can vary based on the number of grade crossings and types of safety measures used. Public authorities, which typically incur the costs and receive the benefits of quiet zones, must therefore decide whether the benefits of quiet zones exceed the costs.

Examples of the Federal Railroad Administration's Approved Quiet Zone Safety Measures



Source: GAO. | GAO-18-97

To evaluate the effectiveness of its train horn regulations, FRA has analyzed data on grade crossings in quiet zones and is transitioning to a formal process for inspecting quiet zones.

- **Analyses:** FRA's analyses showed grade crossings in quiet zones were generally as safe as they were when train horns were sounded. However, these analyses did not control for changes to grade crossings' characteristics over time—e.g., train speeds or frequency. Such changes may decrease the analyses' reliability. A revised methodology that accounts for these changes could provide FRA with better information on the long-term effects of the train horn regulations, including the safety of quiet zones.
- **Inspections:** Recognizing the need for additional oversight, FRA has taken steps to formalize its process for inspecting quiet zones. FRA has primarily relied on public authorities to oversee quiet zones and ensure compliance with the train horn regulations, in addition to informal inspections by FRA's Grade Crossing Managers. In September 2017, FRA began conducting formal inspections of quiet zones using Grade Crossing Inspectors. However, FRA has not developed guidance for how inspections are to be conducted, including how frequently inspections are to be performed or what should be examined. Without guidance, FRA cannot ensure that inspections are being conducted consistently across FRA's eight regions.

Contents

Abbreviations

ASM	alternative safety measure
CCM	ccmMercury
GCIS	Grade Crossing Inventory System
GCM	Grade Crossing Manager
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
NOI	Notice of Intent
OMB	Office of Management and Budget
RAIRS	Railroad Accident/Incident Reporting System
RFIA	Regulatory Evaluation and Regulatory Flexibility Assessment for Use of Locomotive Horns at Highway-Rail Grade Crossings Final Rule
SSM	supplemental safety measure

U.S. GOVERNMENT ACCOUNTABILITY OFFICE
441 G St. N.W.
Washington, DC 20548

October 31, 2017

The Honorable John Thune
Chairman
The Honorable Bill Nelson
Ranking Member
Committee on Commerce, Science, and Transportation
United States Senate

The Honorable Bill Shuster
Chairman
The Honorable Peter DeFazio
Ranking Member
Committee on Transportation and Infrastructure
House of Representatives

The Honorable Ed Perlmutter
House of Representatives

Accidents where railroad tracks cross roads (termed “grade crossings”) are a major source of fatalities in the U.S. railroad industry.[1] According to data from the Federal Railroad Administration (FRA)—the federal agency that oversees rail safety, including the safety of grade crossings—in 2016 there were more than 2,000 accidents at grade crossings, resulting in 264 fatalities, or about 36 percent of all railroad fatalities.

To prevent accidents at grade crossings, railroads have historically sounded their horns to warn motorists of oncoming trains. However, according to FRA, since the 1970s, many cities, counties, and towns around the nation enacted whistle bans (i.e., local ordinances which prohibit or restrict the use of train horns or whistles at grade crossings).[2] The whistle bans were allowed due in part to community complaints about

[1]According to FRA guidance, grade crossing accidents can also be referred to as grade crossing incidents, or grade crossing collisions. To be recorded as a grade crossing accident, an accident must meet three conditions: (1) involve on-track equipment, (2) involve a highway user, and (3) the accident occurs at a designated grade crossing.

[2]For example, in 1984 the state of Florida authorized local communities to ban the sounding of horns by intrastate railroads if the grade crossings were equipped with flashing lights and gates. This ban primarily affected the Florida East Coast Railway Company.

the negative effects of the train horn noise on resident's quality of life. While whistle bans may have reduced noise, in 1990 FRA conducted an analysis on Florida's whistle bans that showed that they led to a 195 percent increase in accidents at grade crossings during nighttime hours.

Partially as a result of FRA's analysis and the spike in accidents associated with selected whistle bans, in 1994 FRA was required in statute to issue train horn regulations governing the sounding of train horns at all public grade crossings.[3] The statute also provided FRA authority to make exceptions. In August 2006, FRA issued its final rule on the use of locomotive horns at highway-rail-grade crossings.[4] The rule provided states and public authorities[5] with an opportunity to establish "quiet zones," where train horns are not routinely sounded as trains approach grade crossings.[6] However, certain conditions must be met to mitigate the increased risks resulting from the absence of the train horn. While grade-crossing accidents have remained relatively constant in recent years, federal and private-sector railroad officials remain concerned about grade crossings' safety, including whether grade crossings in quiet zones are as safe as grade crossings where the train horn is sounded. These concerns are often in conflict with public authorities who want to establish quiet zones to reduce noise.

The Fixing America's Surface Transportation Act included a provision for GAO to review FRA's final rule.[7] This report discusses: (1) what is known

[3]Pub. L. No. 103-440, § 302(a)(1994). *Public*-highway-rail-grade crossings are locations where a public highway, road, or street crosses one or more railroad tracks at-grade. *Private*-highway-rail-grade crossings are highway-rail-grade crossings which are not a public-highway-rail grade crossing. 49 C.F.R. § 222.9. Throughout this report we will refer to public-highway-rail grade crossings as grade crossings, and specify when we are referring to private highway-rail-grade crossings.

[4]The final rule was codified in parts 222 and 229 of Title 49, Code of Federal Regulations. An interim final rule was issued in December 2003. The final rule was initially issued in April 2005; however, after petitions for reconsideration were received a revised final rule was issued in August 2006. 71 Fed. Reg. 47614 (Aug. 17, 2006). Reference to the final rule is the revised final rule issued in August 2006.

[5]Public authority means the public entity responsible for traffic control or law enforcement at the public highway-rail-grade or pedestrian crossing. According to FRA officials, public authorities can include cities, towns, or counties.

[6]A "quiet zone" is a section of rail line at least one-half mile in length that contains one or more consecutive public grade crossings at which train horns are not routinely sounded when approaching the grade crossings.

[7] Pub. L. No.114-94, § 11403(a) (2015).

about the benefits and costs of quiet zones; (2) what challenges, if any, public authorities and others encounter in establishing quiet zones; and (3) how, if at all, FRA is evaluating the effectiveness of federal train horn regulations.

The scope of this work focused primarily on new quiet zones—that is, quiet zones that were established after FRA issued the train horn regulations in August 2006.[8] For each of our objectives, we reviewed pertinent FRA regulations and documents; conducted a literature review of academic material on quiet zones;[9] interviewed FRA program officials in headquarters and conducted in-depth interviews with a nongeneralizable sample of 40 stakeholders—including officials from 8 freight railroads, 5 private industry consulting firms with experience helping public authorities establish quiet zones, 6 state agencies, 13 public authorities that established quiet zones within these 6 states, and Grade Crossing Managers (GCM)[10] in each of FRA's 8 regions. We selected the states based on a number of factors including the number of quiet zones established since federal regulations were issued, the number of grade crossings within quiet zones, and geographic diversity.[11] We selected the public authorities for interviews based on factors similar to the state selections, such as the number of new quiet zones, the number of grade crossings in new quiet zones, geographic diversity, and recommendations from FRA's GCMs and FRA's program officials. We asked each of these stakeholder groups a similar set of questions to

[8]The federal train horn regulations also included provisions for pre-rule quiet zones—grade crossings at which state statutes or local ordinances restricted the routine sounding of train horns, or at which locomotive horns did not sound due to formal or informal agreements between the public authority and the railroad(s) prior to the train horn regulations. The train horn regulations excludes about 390 crossings in Chicago, Illinois (called the "Chicago Region Exemption"), which were governed by the Illinois Commerce Commission.

[9]We conducted a literature review of pertinent studies in peer-reviewed journals, trade publications, and conferences, among others, published from January 1, 1996, through October 17, 2016.

[10]GCMs, officially known as Crossing and Trespasser Regional Managers, are responsible for, among other things, serving as subject matter experts on the federal train horn regulations and coordinating regional assistance to local public authorities regarding implementation of quiet zones.

[11]Five of the states we selected had the highest number of new quiet zones—California, Colorado, Florida, Illinois, and Texas. We also conducted interviews in Maryland before we conducted other interviews to test our interview protocol. Maryland was selected for this purpose because the location allowed us to minimize the resources required.

gather the individual's views on each of our objectives; these views cannot be generalized to others. With respect to the freight railroads, we selected the seven largest freight railroads, in addition to the railroad involved with the Florida whistle ban. The private industry consultants were selected based on recommendations from FRA and other stakeholders we interviewed.

We also conducted additional work related to each of the objectives:

- To describe what is known about the benefits and costs of quiet zones, we reviewed FRA's Regulatory Evaluation and Regulatory Flexibility Assessment (RFIA), which evaluated the economic impacts of federal train horn regulations, and a user guide prepared by FRA on how to establish quiet zones.[12]
- To identify what challenges public authorities and other stakeholders encounter in establishing quiet zones, we conducted a content analysis of interviews with stakeholders identified above. We also reviewed FRA's Notice of Safety Inquiry—the agency's retrospective review of the final rule—issued in March 2016.[13]
- To determine how FRA is evaluating the effectiveness of FRA's train horn regulations in quiet zones, we reviewed FRA's safety studies, published in 2011 and 2013, that compared the safety of grade crossings before and after the establishment of the quiet zone to determine whether safety was impacted. To assess the reliability of FRA's studies, we drew on established guidelines for assessing research, our reports on evaluating research programs, and our internal expertise in research design. We also compared FRA's approach to federal internal controls related to information and communication.[14] In addition, we reviewed FRA policies and procedures to determine its' oversight approach and then compared

[12]FRA, *Regulatory Evaluation and Regulatory Flexibility Assessment for Use of Locomotive Horns at Highway-Rail Grade Crossings Final Rule (49 C.F.R. Parts 222 and 229)* (Washington, D.C.: July 21, 2003)*;* and FRA, Federal Railroad Administration, Highway-Rail Crossing and Trespasser Programs Division, *Guide to the Quiet Zone Establishment Process: An Information Guide* (Washington, D.C.: September 2013). The RFIA analyzed the potential economic effects of requiring the train horn to be sounded at all public grade crossings and eliminating whistle bans.

[13]See 81 Fed. Reg. 11734 (Mar. 7, 2016).

[14]GAO, *Standards for Internal Control in the Federal Government*, GAO-14-704G (Washington, D.C.: September 2014).

this approach to federal internal control standards that would be applicable to the control environment.

Finally, in order to obtain information about quiet zones, we reviewed FRA's data on quiet zones established from 2005 through 2017. To assess the reliability of these data, we examined FRA reports, analyzed the data to identify any outliers, and interviewed FRA program officials about how the data were collected and used. We determined that the data were sufficiently reliable for our purposes. See appendix I for more information on our scope and methodology and appendix III for a list of organizations we contacted.

We conducted this performance audit from July 2016 to October 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

The United States railroad system consists of a vast network of operations that includes more than 780 railroads operating across 220,000 miles of track—including about 212,000 grade crossings. Both freight and passenger railroads operate across the system. The freight railroad industry is dominated by the seven largest railroads, referred to as class I railroads, whereas passenger rail service includes Amtrak and 29 commuter railroads.[15]

FRA is responsible for providing regulatory oversight of the safety of both freight and passenger railroads. To accomplish this oversight, FRA issues and enforces numerous safety regulations, including requirements governing track, signal and train control systems, grade crossing warning systems, and railroad-operating practices. FRA monitors railroads' compliance with federal safety regulations through routine and special

[15]The freight railroad industry is divided into three classes based on certain thresholds of annual operating revenues, as determined by the Surface Transportation Board. For 2016, this revenue threshold was at least $447.6 million for class I railroads, at least $35.8 million for class II railroads, and less than $35.8 million for class III railroads.

emphasis inspections on railroads' systems.[16] FRA's inspectors generally specialize in one of five areas. These inspection areas are called disciplines and include: (1) operating practices, (2) track, (3) hazardous materials, (4) signal and train control, and (5) motive power and equipment.

FRA also has specific responsibilities related to the safety of grade crossings, including issuing regulations regarding the use of train horns at grade crossings. FRA issued regulations in August 2006, after FRA's analysis illustrated the dangers of whistle bans. Federal regulations require that train horns be sounded in advance of all public grade crossings.[17] However, the regulations also provide an opportunity for public authorities to reduce the effects of noise associated with the train horn by establishing quiet zones. While railroads are directed to cease the routine sounding of the train horn at-grade crossings within quiet zones, the final rule states that train horns may still be sounded in emergency situations and to comply with other federal regulations and railroad operating rules.

As of June 2017, there were 570 new quiet zones located across 42 states (see fig. 1).

[16]FRA's inspection approach focuses on direct observations of train components, related equipment, and railroad property, as well as operating practices to determine whether they meet federal safety standards. [17]Train engineers are generally required to sound the horns at least 15 seconds, and no more than 20 seconds, in advance of all grade crossings. Train horns must be sounded in a standardized pattern of 2 long, 1 short and 1 long blast, with the volume ranging from 96 decibels to 110 decibels.

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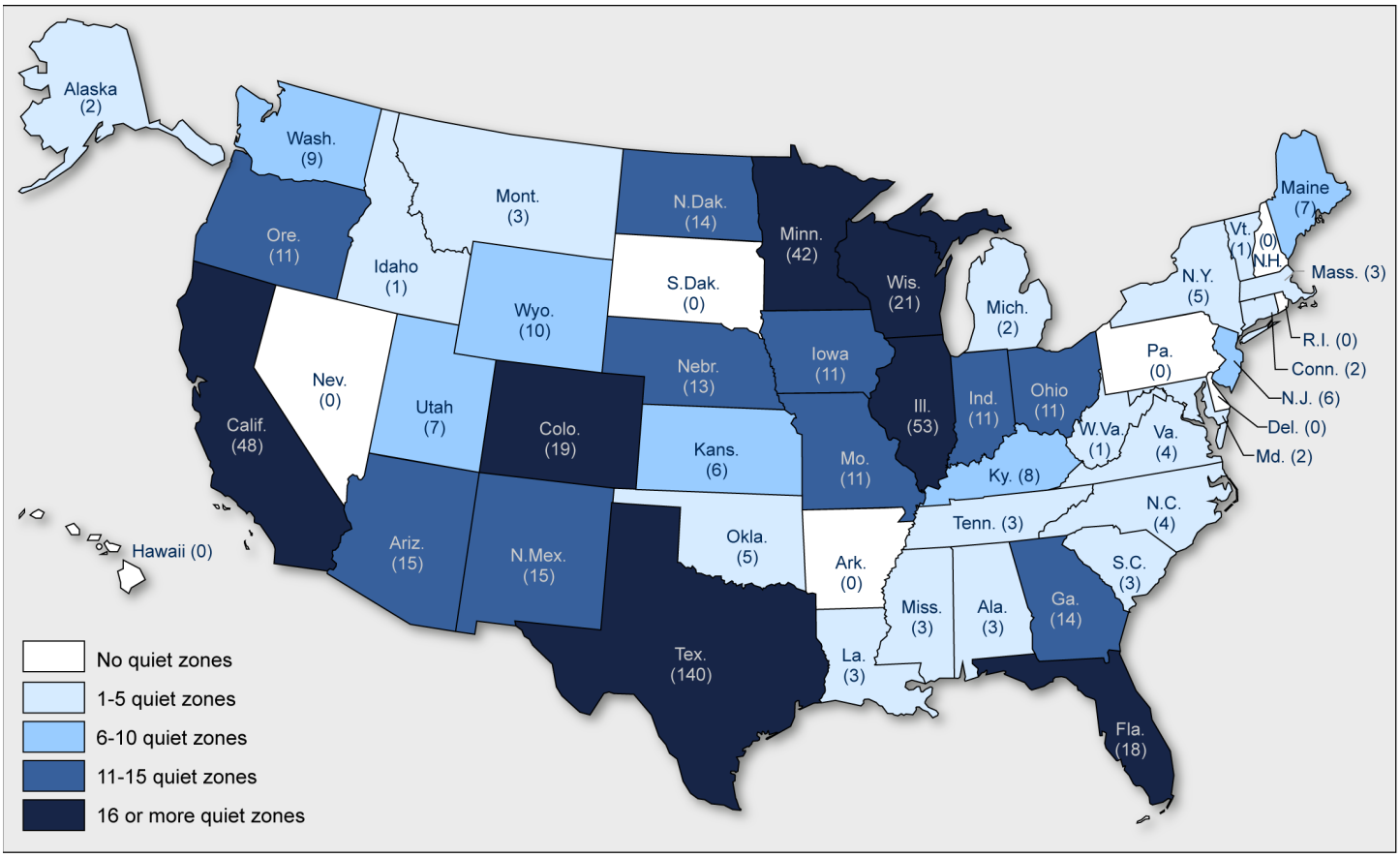
Figure 1: New Quiet Zones Established in the United States from June 2005 to June 2017



Sources: GAO analysis of the Federal Railroad Administration data on grade crossings and Map Resources (map). | GAO-18-97

Public authorities must follow a number of steps and work with federal and state agencies, as well as railroads to establish quiet zones (see fig. 2). At a minimum, each grade crossing within a quiet zone must include active warning devices—these include flashing lights, gates, constant warning time devices, and power out indicators.[18] As shown in step 3 (fig.2), public authorities must select safety measures—either supplemental safety measures (SSM) or alternative safety measures

[18]Constant warning time is a railroad system that uses a train's approach speed to determine when it will reach a grade crossing, and then start the crossing gate cycle a specified time before the train reaches the crossing. According to the final rule, constant warning time devices are required if reasonably practical. A power out indicator provides notification to train crews that there is no commercial electrical power at a grade crossing.

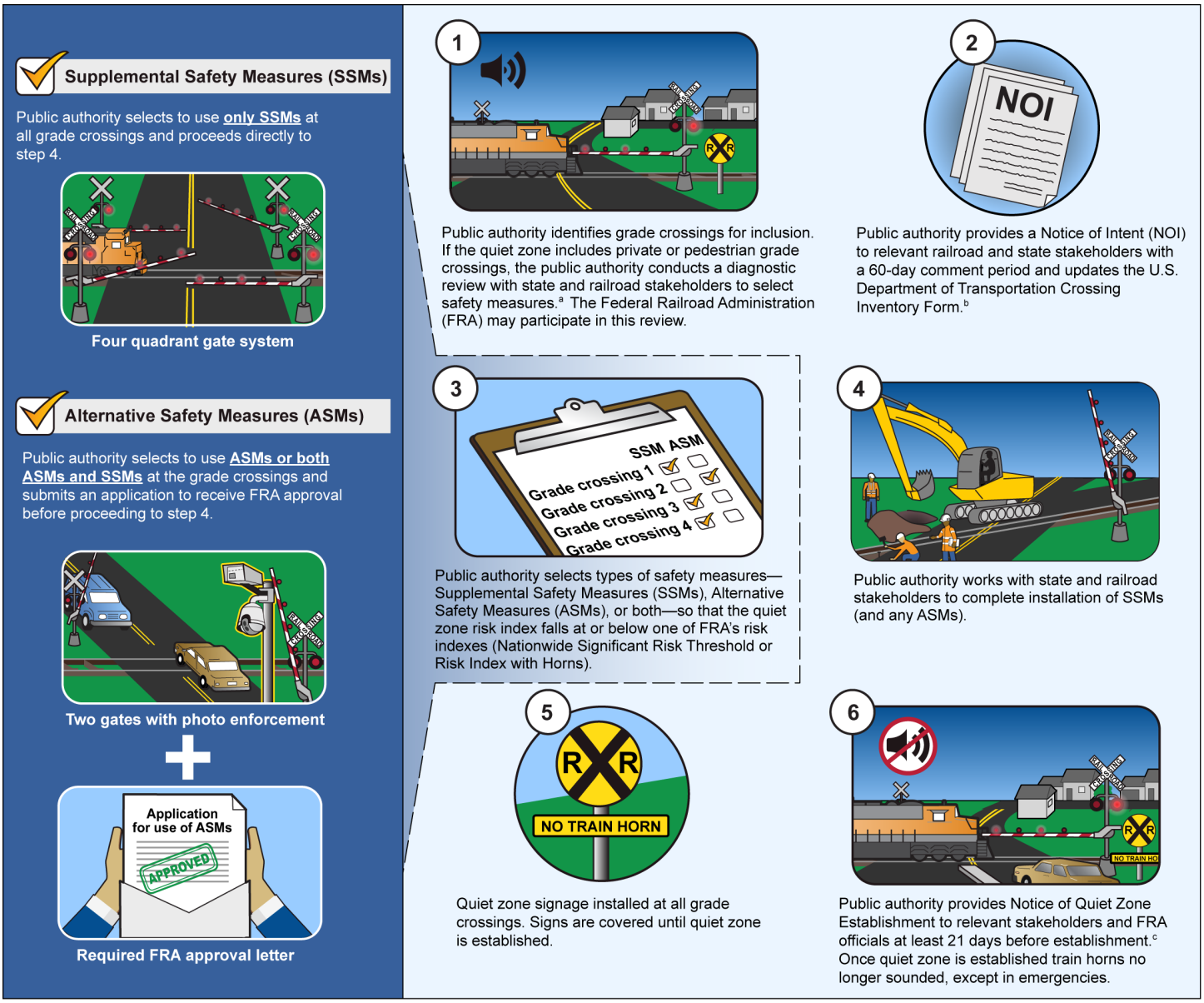
(ASM)—for grade crossings, measures that mitigate the increased risks of not sounding the train horn.[19] SSMs—such as eliminating a grade crossing, installing traffic channelization devices[20] extending 100 feet from the crossing gates, or installing four quadrant gates—are FRA pre-approved safety measures. On the other hand, ASMs—such as traffic channelization devices that are less than the required length to be an SSM—require individual review by the FRA. Public authorities must install safety measures at enough crossings within the proposed quiet zone so that the quiet zone's risk index is at or below one of FRA's two risk thresholds.[21]

[19]Under some circumstances public authorities can establish quiet zones without additional SSMs or ASMs, where adequate safety features are already in place or where the risk of accidents is below certain FRA risk thresholds.

[20]"Channelization device" means a traffic separation system made up of a raised longitudinal "channelizer," with vertical panels or tubular delineators that is placed between opposing highway lanes and is designed to alert or guide traffic around an obstacle or to direct traffic in a particular direction.

[21]FRA has two risk indexes, (1) the Risk Index with Horns and (2) the Nationwide Significant Risk Threshold. The Risk Index with Horns captures the average risk level if the train horn was routinely sounded at the grade crossings in the proposed quiet zone, and the Nationwide Significant Risk Threshold captures the average nationwide level of risk of highway-rail-grade crossings equipped with flashing lights and gates and at which locomotive horns are routinely sounded. The Nationwide Significant Risk Threshold is variable and subject to change over time. FRA annually calculates the Quiet Zone Risk Index for each quiet zone established in relationship to the Nationwide Significant Risk Threshold and compares it to the current Nationwide Significant Risk Threshold. This review is not conducted for quiet zones established by having an SSM at every public grade crossing or by reducing the Quiet Zone Risk Index to the Risk Index with Horns. Within six months of FRA's notification that the Quiet Zone Risk Index exceeds the Nationwide Significant Risk Threshold, the public authority must make a written commitment showing specific steps to lower the potential risk. A public authority then has 3 years from the date of FRA's notification to bring a quiet zone into compliance.

Figure 2: Process Public Authorities Follow to Establish Quiet Zones



Source: GAO analysis of FRA quiet zone process. | GAO-18-97

[a]Each pedestrian crossing or private crossing to an active commercial or industrial site must be reviewed by a diagnostic team and equipped or treated in accordance with its recommendations. The public authority must invite the state agency responsible for grade crossings' safety and all affected railroads to participate in the diagnostic review. FRA is not required to participate in diagnostic reviews.

[b]The Notice of Intent provides railroads and state agencies with an opportunity to provide comments and recommendations on the quiet zone. A complete and accurate U.S.

Department of Transportation Grade Crossing Inventory Form must be on file with FRA for all crossings within the quiet zone to reflect the current conditions at each crossing.

[c]A Notice of Quiet Zone Establishment must be issued to FRA, applicable railroads, and relevant state agencies indicating a quiet zone is being established at least 21 days prior to the establishment date.

Throughout the process public authorities may work with a number of stakeholders who have roles and responsibilities related to grade crossings. These include:

- **FRA:** In addition to issuing rules and regulations governing train horns and quiet zones, FRA has staff—in headquarters and in FRA's eight regional offices—that review public authority applications for use of ASMs, issue guidance on implementing federal regulations, answer questions from the public, and provide technical assistance related to the establishment of quiet zones. For example, FRA's 19 regional GCMs serve as subject matter experts on the train horn regulations and respond to questions from public authorities, while FRA program officials approve ASMs and conduct required annual reviews of quiet zones established relative to the Nationwide Significant Risk Threshold to ensure they equal or fall below this risk index.
- **Railroads:** Railroads work with public authorities to: (1) identify appropriate safety measures at grade crossings; (2) participate in diagnostic review meetings when the quiet zone includes public, private, or pedestrian grade crossings; (3) receive and comment on public authority's quiet zone notifications (e.g., the Notice of Intent and Notice of Quiet Zone Establishment); (4) install safety measures on railroad property; and (5) direct train crews not to sound horns in established quiet zones.
- **State departments of transportation and rail regulatory agencies:** These agencies receive and comment on Notices of Intent, public authority applications, and Notices of Quiet Zone Establishment; review, and in some cases approve grade crossing modifications; and participate in diagnostic reviews.[22]

[22]Most aspects of jurisdiction over grade crossings reside with the states. Within some states, responsibility is divided between several public agencies and the railroad. In other states, jurisdiction over grade crossings is assigned to a regulatory agency with various names such as the Public Utility Commission. These agencies are responsible for ensuring the safety of grade crossings within the states and, in some cases, approve any modifications to a grade crossing, such as adding SSMs. See U.S. Department of Transportation, FRA, *Compilation of State Laws and Regulations Affecting Highway-Rail Grade Crossings*, Fifth Edition (October 2009).

- **Private industry consultants:** In some cases, public authorities hire consultants to provide subject matter expertise on establishing quiet zones. Consultants may perform such tasks as determining the feasibility of a quiet zone; arranging diagnostic reviews; assessing quiet zone risks; and identifying appropriate safety measures.

According to FRA officials, federal funding is available to reduce the risks of accidents at grade crossings, but funding specific to quiet zones is limited and no dedicated source exists. The primary source of federal funding to improve grade crossings' safety is the Federal Highway Administration's (FHWA) Railway-Highway Crossings (Section 130) Program, which received a set-aside of $230 million for fiscal year 2017 from amounts authorized for the Highway Safety Improvement Program.[23] While the funds are not specific to quiet zones, Section 130 funds may be used to upgrade crossing infrastructure, an upgrade that may result in a public authority's being more easily able to establish a quiet zone. However, according to FRA program officials, the program is competitive and funding must be used for safety projects. They said projects are selected on a safety priority basis, and quiet zones are generally considered a quality of life issue, not a safety improvement. Hence, it is unlikely that many public authorities will obtain these funds to establish quiet zones. Further, the officials said that while other federal funding is available for which grade crossing improvements may be an eligible expense, none is dedicated to quiet zones.

According to FRA officials, limited federal funding is available because quiet zones are not a national issue. They produce highly localized quality-of-life benefits and little or no improvement in the level of safety at grade crossings, but rather the safety measures are installed to compensate for silencing the sound of a train horn at grade crossings.[24] As a result, public authorities seeking to establish quiet zones generally fund the installation of SSMs and ASMs. Given limited funding, public authorities determine whether the benefits of establishing a quiet zone outweigh the costs to establish them.

[23]23 U.S.C. § 130(e)(1)(A)(ii). Section 130 program funds are eligible for projects at all public grade crossings and apportioned to each state annually. Fifty percent of a state's apportionment is dedicated to the installation of protective devices at grade crossings, whereas the remainder of funds can be used for hazard elimination projects, including protective devices. Section 130 projects are funded at a 90 percent federal share, with the state or the roadway authority funding the remaining 10 percent.

[24]See Congressional Research Service, *The Federal Railroad Administration's Train Horn Rule* (June 3, 2013).

Benefits of Quiet Zones Have Not Been Quantified, and Costs Depend on Many Factors

While Benefits of Quiet Zones Have Not Been Quantified, Selected Stakeholders Highlighted Benefits for Communities

Benefits derived from establishing quiet zones and reducing noise from the train horn have not been quantified in research we reviewed or by the public authorities (i.e., communities) that we interviewed. Specifically, our review of literature did not identify any studies that had quantified the benefits resulting from public authorities establishing quiet zones at grade crossings where the horn was previously sounded. Further, FRA has not quantified benefits associated with quiet zones, but did note in its RFIA that quiet zones would likely result in localized quality-of-life benefits from silencing of the horn at locations where it had previously been sounded.[25] Finally, none of the public authorities we interviewed have conducted any analysis that has quantified benefits associated with quiet zones or were aware of any studies that quantified these benefits.

While the benefits of quiet zones have not been quantified, the majority of stakeholders whom we interviewed stated that quiet zones do provide benefits for communities. The most commonly cited benefit (35 of 40 stakeholders) was the reduction in noise due to the absence of routine sounding of the train horn. Stakeholders told us this noise reduction led to improvements in quality of life from, for example, the ability to sleep better at night, as well as a reduction in residents' noise complaints. To a lesser extent, stakeholders also cited economic development and safety as benefits for communities. Almost half of the stakeholders (19 of 40) we interviewed told us that areas with new quiet zones saw an increase in economic development from such things as new businesses or residential developments. Similarly, almost half of the stakeholders (17 of 40) said

[25]FRA's RFIA measured safety benefits resulting from eliminating whistle bans and requiring that trains horns be sounded at all grade crossings. The RFIA did not measure benefits that may result from establishment of a quiet zone to crossings for which train horns were previously sounded.

that quiet zones increased safety along rail lines, given the addition of new safety measures at the grade crossings.

While the benefits associated with quiet zones have not been measured, more generally, researchers have analyzed the effect of transportation noise on property values and health to understand the effects.[26]

- **Property values:** Our review identified two studies that analyzed the effect of freight train noise on property values in selected communities and found mixed results. In one study, the authors looked at the effect of a freight rail line on home prices and concluded that, while for smaller homes results suggest a negative and statistically significant effect on sale prices, results for medium and larger units were mixed.[27] In the second study, the author examined the effect of a railroad's decision to ignore whistle bans and found that proximity to rail lines and crossings had a negative and statistically significant effect on residential property values in some communities, with the effect varying depending on distance to the rail line.[28] The author concluded that the crossing effects were largely temporary, because over time, buyers less sensitive to noise would likely move into the area, reducing or eliminating any long-term effect of the railroad's decision. However, both of these studies have limitations, are based on data almost two decades old, and the results might not be representative of the economic effects associated with quiet zones.[29]

[26]Transportation noise is generally considered undesirable but there is no well-defined market price for establishing its value. As a result, researchers may rely on indirect methods, such as changes in property values, as a proxy to understand this value.

[27]See Robert A. Simons and Abdellaziz El Jaouhari, "The Effect of Freight Railroad Tracks and Train Activity on Residential Property Values," *The Appraisal Journal*, 72.3 (Summer 2004), 223. For this study, the authors used a model to estimate the effect of proximity to railroad tracks and crossings on the sale price of homes. The authors analyzed data from Cuyahoga County, Ohio. With respect to the effect of proximity to grade crossings, the study found mixed results, depending on size of the home and other factors.

[28]D. Clarke,"Externality Effects on Residential Property Values: The Example of Noise Disamenities," *Growth and Change*, 37, 3 (September 2006). The author used a model to estimate the effect of one railroads' (Conrail) decision to ignore whistle bans on residential property's real sales prices in three U.S. counties. Counties were selected based on availability of data that spanned the period of Conrail's decision to ignore whistle bans.

[29]These studies had two main limitations. First, the studies used a small population to conduct their research—one study used home sales data from one county and the other used data from three counties. Second, both studies were conducted some time ago, and relied on data from the late 1990's, making the results almost 20 years old.

- **Health effects:** In 2002, FRA summarized available academic literature on the undesirable effects of noise—primarily focusing on transportation noise associated with aircraft, highways, and railroads.[30] According to the research, transportation noise can cause undesirable psychological health effects, such as annoyance, and physiological health effects, such as hearing impairments and sleep disturbance on individuals.[31]

Costs to Establish Quiet Zones Depend on Many Factors

Total costs to establish quiet zones depend on many factors and vary widely.[32] Prior to issuing regulations, in the RFIA, FRA identified the types of costs associated with establishing quiet zones that can be incurred by public authorities, states, railroads, and FRA. These factors included such things as upgrading signals at grade crossings; purchasing, installing, and maintaining safety measures like flashing lights and gates; developing, reviewing, and evaluating quiet zones; and designing public education and awareness efforts. The actual cost that public authorities incur to establish quite zones will vary and depend on these and other factors. Both FRA program officials and FRA guidance has stated that, in general, the factors that affect the costs include such things as the number of grade crossings in a quiet zone, the geography of the area in which the quiet zone is established, and the types of safety measures a public authority decides to install. For example, some grade crossings may require upgrades to constant-warning-time devices or installation of complex and costly SSMs (e.g., four-quadrant gates), whereas other grade crossings may require fewer upgrades or less complex safety measures (e.g., traffic channelization devices). In 2013, FRA published guidance for public authorities in which it estimated that the capital costs public authorities may incur to establish quiet zones may range from about $30,000 to more than $1 million per grade crossing, depending on the types of safety improvements and existing infrastructure at grade

[30]U.S. Department of Transportation, John A. Volpe National Transportation Systems Center, *General Health Effects of Transportation Noise*, FRA/RDV-03/01 (Cambridge, MA: June 2002).

[31]The study did not isolate the effect of rail noise on individuals.

[32]Total costs refer to all direct (e.g., capital cost of safety measures) and indirect costs (e.g., administrative costs) associated with the establishment of the quiet zone.

crossings.[33] The RFIA stated that, because grade crossings may differ significantly, public authorities must analyze the characteristics of each and the safety measures needed to accurately estimate costs to establish quiet zones.

Public authorities we interviewed confirmed that the costs to establish quiet zones do vary and depend on many factors. All 13 public authorities we interviewed often said that in establishing quiet zones they incurred costs for identifying safety measures for grade crossings, purchasing and installing these safety measures, and maintaining quiet zones, among other things. According to the public authorities we spoke with in our review, the cost to establish quiet zones ranged from about $14,000 to several million dollars.[34] However, this range also reflects different levels of quiet zone activity; for example, one public authority established a quiet zone at a single grade crossing, while another established a quiet zone that encompassed 60 grade crossings.

In addition, railroads, states, and FRA may incur costs as part of establishing quiet zones. For example, officials from seven of the eight railroads we interviewed stated that they incur costs for such things as (1) participating in diagnostic reviews, (2) commenting on Notice of Intents and Notice of Quiet Zone Establishments; and (3) notifying and training crews not to sound horns in quiet zones. States may also incur costs. Two states included in our review—California and Colorado—have public utility commissions that told us they are required to review and approve any modifications to grade crossings in their states, including those associated with quiet zones. Finally, FRA incurs costs related to quiet zones. This cost includes reviewing quiet zone applications, participating in diagnostic reviews when invited, and the time GCMs or other FRA staff

[33]FRA, *Guide to the Quiet Zone Establishment Process: An Information Guide* (Washington, D.C.: September 2013). According to FRA program officials, these estimates are not an exact amount, but rather an “order of magnitude” cost estimate intended to give public authorities a rough sense of what quiet zones might cost per grade crossing. We did not validate these costs or the underlying methodology used to prepare these estimates.

[34]These cost estimates were provided by public authorities, and may not represent total costs to establish a quiet zone.

spends providing technical assistance to public authorities and others on establishing quiet zones.[35]

While public authorities are generally responsible for paying the costs to establish quiet zones, about half of the public authorities we interviewed (10 of 13) said they obtained funding from outside sources to help pay for the zones, for example:

- **Federal funds:** Six of the public authorities we interviewed reported receiving federal funds to help establish their quiet zones.[36] In particular, one public authority that we interviewed reported receiving a $3.3 million Transportation Investment Generating Economic Recovery grant to establish a quiet zone.[37] Alternatively, public authorities in the remaining five communities were eligible for grade crossing safety improvement efforts that were designated by the state through FHWA or other programs.[38]
- **State or railroad funds:** For three of the public authorities we interviewed, quiet zones were established in conjunction with larger state department of transportation highway or railroad projects and these entities paid a portion of the costs.
- **Grade crossing incentive funds:** Four of the public authorities we interviewed received grade-crossing incentive funds from railroads or state departments of transportation to close grade crossings that were part of a quiet zone.
- **Private funds:** In two communities, private investors provided financial assistance to public authorities for a quiet zone. For

[35]As discussed earlier, FRA is required to review applications when public authorities use ASMs or modified SSMs to establish quiet zones. According to FRA officials, about 10 percent of new quiet zones require applications for FRA review.

[36]While several of the public authorities in our nongeneralizable sample obtained federal funds to help pay for their quiet zones, this funding may not be typical of other public authorities that have, or wish to establish, quiet zones.

[37]Congress first authorized and appropriated funds for a national surface transportation infrastructure discretionary grant program in the American Recovery and Reinvestment Act of 2009 (Pub. L. No. 111-5, 123 Stat. 115, 203 (Feb. 17, 2009)). This program has become known as Transportation Investment Generating Economic Recovery.

[38]As stated earlier, FHWA Section 130 funds are not available to establish quiet zones. Rather, these funds are available to install protective devices at grade crossings that are designated high-risk for accidents.

example, a private developer paid for a quiet zone in order to facilitate the building of residential developments.

Selected Public Authorities and Other Stakeholders Reported Several Challenges in Establishing Quiet Zones and Suggested Potential Improvements

Public authorities and other stakeholders that we spoke with reported several types of challenges with establishing quiet zones. These stakeholders noted three primary challenges, which included the cost to establish quiet zones, obtaining stakeholder cooperation, and the process to establish quiet zones. As aforementioned, public authorities generally incur costs to establish quiet zones, so cost plays a major role in a public authority's decision of whether to pursue a quiet zone or not. The most commonly cited challenge was cost (29 of 40 stakeholders). In some cases, officials whom we interviewed reported that costs were the main reason that public authorities delayed or discontinued the process to establish a quiet zone.

In addition to cost, stakeholders cited two other primary challenges to establishing quiet zones—obtaining cooperation among quiet zone participants and the process for establishing quiet zones—and suggested a variety of improvements related to bolstering the process.

- **Cooperation among quiet zone participants (18 of 40):** Although stakeholders we spoke with cited a number of cooperation issues, including difficulties in getting private grade crossing owners to participate and lack of state cooperation, over half (10 of 18) cited cooperation between public authorities and railroads as a challenge. Such cooperation is important since both must typically work together to establish quiet zones. However, there are natural tensions between public authorities and railroads with respect to establishing quiet zones. As discussed earlier, stakeholders we spoke with supported quiet zones believing they not only maintain safety, but improve quality of life. On the other hand, all eight railroads told us that the train horn is the most effective safety measure.
- **The process for establishing quiet zones (16 of 40):** In general, the stakeholders we spoke with cited a variety of process related challenges, including that the train horn regulations are difficult to

understand, FRA waivers are difficult to obtain,[39] and that the quiet zone process could be better explained by FRA. In particular, over half of the stakeholders whom said that process was a challenge (10 of 16) explained that the quiet zone process was either difficult to understand or navigate or that the requirements to establish a quiet zone were confusing. For example, one public authority told us that rules for establishing a quiet zone can be difficult to interpret and that this difficulty could impact public authorities' establishment of quiet zones. Four of the 16 stakeholders also told us the process was time consuming and, in some instances, can take years to complete. FRA program officials said the turnaround time for FRA reviews depends on the quality of materials provided. They said it generally takes 90 to 120 days for FRA to complete its review, but it can take longer if there is missing information or other problems with a public authority's application, as is often the case.

Stakeholders we spoke to suggested three types of process-related improvements: administrative changes to improve the efficiency of the process, improvements to FRA's role in the quiet zone process, and improvements to FRA guidance that public authorities use to establish quiet zones.

Administrative improvements: Twenty-five of the 40 stakeholders that we interviewed identified one or more types of administrative process improvements to improve the efficiency of the process for establishing quiet zones or better facilitate their establishment. These suggested improvements included:

- *Making the quiet zone process more user-friendly (11 of 40 stakeholders that offered suggestions related to the quiet zone process)*: Stakeholders we interviewed identified various improvements that could streamline some administrative requirements of the quiet zone process. These steps include standardizing or automating the quiet zone process, developing sample Notices of Intent or Notices of Quiet Zone Establishment that public authorities could use to input information, and making quiet zone materials

[39]Waivers of compliance with a provision of the regulations may be granted when the FRA Associate Administrator for Railroad Safety finds that a waiver is in the public interest and consistent with the safety of highway and railroad users. In general, to obtain a waiver from train horn regulatory provisions, two parties file a petition, the railroad owning or controlling operations over the railroad tracks crossing the public-highway-rail-grade crossing and the public authority that has jurisdiction over the roadway crossing the railroad tracks. 49 C.F.R, § 222.15.

available electronically.[40] For example, GCMs in one FRA region told us that by standardizing the paperwork all regions would receive the same documents, a step that would make review easier. In addition, these officials said public authorities often forget to include key information in the Notice of Intent and with a standard form this may not occur.

- *Requiring diagnostic reviews for all quiet zones (7 of 40)*: As discussed earlier, when there are private grade crossings that allow public access to active commercial or industrial sites or pedestrian grade crossings in a quiet zone, a diagnostic review is required.[41] The regulations require public authorities to provide state agencies and affected railroads, among others, the opportunity to participate in diagnostic reviews. According to FRA program officials, FRA is not required to participate in diagnostic reviews. Diagnostic reviews evaluate conditions at proposed quiet-zone crossings and a diagnostic review team makes recommendations about measures that are needed to protect safety at these crossings. Seven stakeholders we interviewed suggested that diagnostic reviews should be required for all quiet zones, not just instances when there are private or pedestrian crossings. For example, one GCM told us conducting a review for all grade crossings provides a better idea of what safety measures are needed and is a prudent action to protect public safety.[42]

FRA's Role in the Process: About half of the stakeholders we spoke with (21 of 40) suggested improvements related to FRA and its role in the quiet zone process:

- *Increase FRA oversight and inspection of quiet zones (11 of 40)*: In general, these stakeholders believe FRA should be more involved with inspections and oversight of quiet zones, particularly between when a Notice of Quiet Zone Establishment is issued and when a quiet zone is established. Most of the railroad stakeholders we spoke with (6 of 8) believe there is a need for increased FRA involvement

[40]Federal train horn regulations require public authorities to prepare Notice of Intent and Notice of Quiet Zone Establishment documents.

[41]49 C.F.R. §§ 222.25(b)(1), 222.27(b).

[42]According to FRA officials, a change to the train horn regulations would be necessary to require diagnostic reviews at all grade crossings. In addition, they said FRA has historically recommended that public grade crossings have a diagnostic review, even though it is not required.

with quiet zones' oversight. Among the railroad concerns were that without additional FRA oversight, quiet zones may not achieve compliance with the train horn regulations, and that public authorities may not actually install the safety measures identified in the Notice of Quiet Zone Establishment. A GCM in one FRA region told us that officials discovered noncompliant safety measures and missing signs after quiet zones had been established in this region, and that safety measures that were supposed to be installed were not. We discuss quiet zone oversight issues later in this report.

- *Expedite FRA's review of quiet zone applications (10 of 40*): As discussed earlier, FRA plays a role in the quiet zone process, in part, by reviewing quiet zone applications when ASMs are used. The 10 stakeholders felt that FRA should expedite its review process. For example, a GCM in one FRA region suggested FRA shorten the review time by developing a list of frequently used ASMs and their safety effectiveness ratings and posting them online, a process that would save FRA time when reviewing ASMs.

Guidance about the process: Finally, stakeholders we spoke with suggested guidance on the quiet zone process could be improved (17 of 40).

- In particular, 13 of the 17 stakeholders whom offered suggestions about guidance said that FRA's quiet zone guidance should be clearer or that training about the quiet zone process is needed. As previously discussed, some stakeholders told us the quiet zone process is difficult to understand or navigate, or that FRA could better explain the process. In particular, two public authorities suggested some form of step-by-step guide is needed to better describe the process, and GCMs in three FRA regions also suggested classes or other types of education were needed to better help public authorities understand the quiet zone process. According to FRA program officials, FRA's quiet zone guidance consists of its user guide and a document on how to create a quiet zone.[43] The train horn regulations also specifies how public authorities are to establish quiet zones and includes steps to follow under the public authority designation or public authority application processes.

Moving forward, FRA is in the process of conducting a retrospective regulatory review and deciding what, if any, changes may be needed. In March 2016, FRA issued a Notice of Safety Inquiry, which, according to

[43]FRA, *How to Create a Quiet Zone* (posted online September 27, 2012).

FRA, is a retrospective review of the train horn regulations. The Notice of Safety Inquiry solicited comments about many aspects of the train horn regulations, including whether FRA can decrease the barriers public authorities encounter when establishing a quiet zone. Among other things, the inquiry seeks comments about whether there should be an online process for submitting notices and other required quiet zone paperwork, whether diagnostic reviews should be required for all quiet zones, and if the regulations should be amended to include common ASMs in the list of approved SSMs. The Inquiry is also looking at other aspects of the quiet zone process and guidance. As of July 2017, FRA was still in the process of reviewing comments received in response to the notice. FRA program officials did not indicate what, if any, changes may result from this inquiry, but said any changes that are made would be handled through a rulemaking. However, FRA program officials noted that a rulemaking would not be necessary for the agency to provide public authorities with additional tools to aid in the development of a quiet zone, such as guidance.

FRA Has Conducted Analyses of Safety in Quiet Zones and Is Formalizing Quiet Zone Inspections, but Limitations Exist

FRA's Analyses Generally Indicate That Grade Crossings in Quiet Zones Are As Safe As The Same Grade Crossings When the Train Horn Was Sounded, but Methodology Has Limitations

One way FRA evaluates the effectiveness of its train horn regulations is through conducting analyses of data on the safety of grade crossings in quiet zones. Those analyses show that grade crossings in quiet zones are generally as safe as the same grade crossings when the train horn was sounded. Specifically, FRA conducted analyses in 2011 and 2013 to assess whether there was a statistically significant difference in the number of accidents before and after implementation of quiet zones.[44] The results showed that there was generally no statistically significant difference in the number of accidents that occurred before and after quiet zones were established. To conduct the analyses, FRA grouped quiet zones by the number of years of available data since establishment of the quiet zone, using an equal number of months before and after

[44]FRA, Office of Railroad Safety Grade Crossing Division, *2011 Analysis of the Safety Impact of Quiet Zones at Highway-Rail Grade Crossings* (Washington, D.C.: July 2011) and FRA, Office of Railroad Safety Grade Crossing Division, *2013 Analysis of the Safety Impact of Quiet Zones at Highway-Rail Grade Crossings* (Washington, D.C.: February 2014).

establishment.[45] FRA's analyses in 2011 and 2013 included 359 and 203 quiet zones, respectively.[46]

While FRA's analyses of quiet zones generally showed that grade crossings in quiet zones were as safe as the same grade crossings when the train horn was sounded, in 2013 FRA identified one exception that FRA program officials reported resolving in a subsequent analysis. Specifically, while FRA's 2011 analysis did not show any differences in safety after establishment of the quiet zones, in 2013 FRA concluded that for quiet zones established from May 2010 through April 2011, there was a statistically significant increase in the number of accidents that occurred after the establishment of the quiet zones. Specifically, FRA found that accidents doubled from 11 accidents before establishment of the quiet zones to 22 accidents following the establishment of the quiet zone. After that finding, FRA program officials conducted a preliminary analysis for 2017 and reported that the results did not show a statistically significant increase in accidents for any period of quiet zones, including those established from 2010 through 2011.[47] In addition to looking at quiet zones by establishment year, FRA's 2013 analysis also grouped quiet zones by how they were established, such as with safety measures at all crossings or against FRA's risk indexes. Results from this analysis did not

[45]For example, in 2013 FRA grouped quiet zones by the number of years of available incident data before and after establishment, using a paired t-test to compare the mean number of incidents for a time interval of 1, 2, 3, 4, 5, 6, or 7 year(s) before the quiet zone was established to the mean number of incidents during an equal time interval after establishment.

[46]In 2011, FRA had data on 434 quiet zones; however, 75 were dropped because they did not have a Notice of Quiet Zone Establishment date or because one year of observable data were not available. In 2013, FRA had data on 575 quiet zones; however, 373 quiet zones were dropped because they were in the Chicago region and exempted, they had inconsistent data, they did not have proper Notice of Quiet Zone Establishment information, or because one year of observable data were not available. In its 2011 analysis, FRA noted that it had a number of data quality issues. As a result, FRA program officials told us they implemented additional safeguards in 2013 and reduced the number of observations dropped due to errors to less than one percent.

[47]FRA's analyses grouped quiet zones by year of establishment. However, because these analyses were conducted in different months of the year, the analyses did not compare the exact same grouping of quiet zones for each year. For example, for the 2007-2008 time period, FRA's 2011 analysis included quiet zones established from February 2007 through January 2008, whereas the 2013 analysis included quiet zones established from May 2007 through April 2008.

show an increase in accidents by any establishment method analyzed.[48] As a result, FRA program officials told us that they believe the result in 2013 for quiet zones established from 2010 through 2011 was likely an anomaly and that those quiet zones are as safe as other crossings.

Before-and-after analysis is a methodologically acceptable practice, but the reliability of the results decrease over time because unlike other types of analyses, they do not control for factors that may change over time. In particular, FRA's analyses assume that the number of accidents experienced before the quiet zone is established is a good estimate of the number of accidents that would be expected in the future had the quiet zone not been established. However, FRA's before-and-after analyses have limitations because, unlike other methodologies, they do not take into account changes to characteristics of grade crossings over time. For example, a multivariate method can control for changes to characteristics at grade crossings that may impact safety. These characteristics can include changes to train or vehicle traffic, train or vehicle speeds, time of day when train activity occurs, number of highway lanes, the number of tracks in use, or other changes to surrounding roads or infrastructure at a crossing. For example, if train or vehicle traffic increased over time, it is possible that the number of incidents would increase, while the risk of an accident would stay the same. Specifically, closing a grade crossing near a quiet zone or increases in traffic from new businesses around a quiet zone could increase traffic after the establishment of a quiet zone; however, these changes would not be factored into FRA's current methodology for conducting safety analyses. This inherent limitation is exacerbated over time, because the assumption that there would be no changes to relevant characteristics of the grade crossings is less likely to be the case as more time passes.[49]

FRA also conducts annual reviews of selected quiet zones to ensure their safety, and FRA program officials told us that this review further validates its before-and-after analyses. As mentioned previously, FRA conducts

[48]FRA grouped each quiet zone into one of 19 quiet zone establishment methods. Since before-and-after analyses require a minimum amount of data for robust results, FRA only analyzed groups that had at least 15 accident data points. As a result, FRA analyzed 6 of the 19 groups and found that none of these groups had a statistically significant decrease in safety,

[49]Since FRA divides the total number of accidents in each group of quiet zones by the number of quiet zones in that group, another limitation of FRA's analyses is that they may mask changes in the number of incidents at any particular quiet zone.

annual reviews of quiet zones established against the Nationwide Significant Risk Threshold because the measure is variable and subject to change over time.[50] According to FRA program officials, about 11 percent of all quiet zones are established against the Nationwide Significant Risk Threshold and are thus included in this annual review. To ensure that established quiet zones fall at or below the Nationwide Significant Risk Threshold, FRA is required to recalculate this measure on an annual basis and notify a public authority if the Quiet Zone Risk Index no longer falls at or below the threshold.[51] By doing so, FRA program officials told us that they are further validating that the grade crossings in quiet zones are as safe as other grade crossings. While this annual review may provide FRA with additional support that grade crossings in quiet zones are as safe as others, it does not address the underlying limitations of a before-and-after analysis.

While the reliability of a before-and-after analysis may decrease over time, FRA has no plans to revise its methodology. In fact, as mentioned previously, FRA program officials told us that preliminary results for their 2017 safety study mirror results from 2011, showing that there was no statistically significant difference in accidents before and after the establishment of quiet zones. According to FRA program officials, the agency is not required to conduct this analysis, but moving forward, program officials plan to conduct the same analysis on a biennial basis to internally validate that grade crossings in quiet zones are as safe as others.

By continuing to rely on the current methodology, FRA's future analyses may continue to provide the agency with information that does not account for changes in characteristics of grade crossings over time. The *Standards for Internal Control in the Federal Government* states that management should use quality information to make informed decisions. This requirement can be satisfied by, for example, obtaining relevant data from reliable sources, obtaining that information on a timely basis, and processing that data into quality information that accurately represents

[50]According to FRA program officials, reviews for quiet zones established with safety measures at all crossings or established against the Risk Index with Horns are not required because these measures are intended to fully compensate for the lack of the train horn.

[51]As part of this process public authorities are required to update information on the quiet zone about every three years. These updates will incorporate any changes in risk level due to vehicle or train traffic, among other things.

what it purports to represent. Furthermore, a previous FRA study that the agency relied on in developing the final rule has reported that changes in grade crossings' characteristics can affect the results of analyses used to predict accidents at grade crossings.[52] As a result, FRA's Rail-Highway Crossing Resource Allocation Procedures recommended that analyses used to predict accidents at grade crossings only include accident data for the most recent 5 years because older accident history information may be misleading due to changes that occur in grade crossings' characteristics over time.[53] While FRA's recommendation was not developed to analyze the safety of grade crossings in quiet zones, the agency's recommendation that accident data older than 5 years may be misleading because of changes that occur to grade crossings' characteristics over time is relevant to those analyses. Nevertheless, FRA program officials told us that they have no plans to revise the methodology because it effectively compares the safety of grade crossings in quiet zones to other grade crossings. By continuing to use the same methodology, the agency may be missing an opportunity to fully understand the safety of grade crossings in quiet zones.

FRA Has Taken Steps to Formalize Quiet Zone Inspections, but Lacks Formal Guidance

In addition to conducting studies, FRA also oversees quiet zones by inspecting them to ensure their safety and compliance with train horn regulations. According to FRA program officials, FRA is not required to inspect quiet zones; rather, public authorities, in conjunction with the railroads, are responsible for maintaining quiet zones and ensuring

[52]FRA, *North Carolina "Sealed Corridor" Phase I U.S. DOT Assessment Report: Report to Congress*, (Washington, D.C.: August 2001).

[53]FRA documentation states the most accurate predictions, in theory, will result from the use of all the available accident history, assuming crossing characteristics remained constant. However, the extent of improvement is minimal if data for more than 5 years are used. It is therefore recommended that only data for the most recent 5 years of accident history be used. This ensures good performance from both the accident prediction formula and use of the most relevant data. Accident history information more than 5 years old may be misleading because of changes that occur to crossing characteristics over time. If it is known that a significant change has occurred to a crossing during the most recent 5 years, such as a warning device upgrade, only the accident data since the change should be used. See FRA, *Rail-Highway Crossing Resource Allocation Procedure User's Guide*, Third Edition, DOT / FRA/ OS -87/ 10 (Washington, D.C.: August 1987).

compliance with train horn regulations.[54] Until recently, FRA has utilized its GCMs to, among other things, informally inspect quiet zones and work with public authorities to resolve issues affecting the safety of quiet zones—issues such as foliage covering signage, maintenance issues with safety devices, or outdated pavement markings.[55] In fact, GCMs in all eight regions told us that they informally inspect quiet zones.[56] According to FRA program officials, the agency has recently identified the need for "more eyes on the ground" to more systematically address maintenance issues within quiet zones and to ensure compliance with train horn regulations.[57] As a result, FRA is transitioning its informal inspection program for quiet zones to a more formal inspection process.

As part of this transition, FRA has taken steps to hire and train new inspection staff. In May 2017, FRA program officials told us that they were in the process of hiring Grade Crossing Inspectors (Inspectors), who would be responsible for conducting quiet zones inspections. In particular, Inspectors would be responsible for, among other things, ensuring compliance with (1) the train horn regulations, (2) emergency notification requirements at grade crossings, and (3) requirements to submit grade crossing inventory forms. Subsequently, FRA program officials told us in

[54]While the train horn regulations do not require physical inspections of quiet zones by FRA, public authorities, or railroads, FRA program officials told us that the regulations do provide FRA with the authority to conduct inspections of quiet zones and, if warranted, terminate a quiet zone or fine a public authority or railroad for violations. In addition, FRA program officials told us public authorities must certify that the Notice of Quiet Zone Establishment is accurate and provide periodic updates that contain written affirmations that safety measures within the quiet zone continue to comply with governing regulations.

[55]As mentioned previously, as of August 2017, FRA officials told us that they employed 19 GCMs across eight regions that are responsible for, among other things, serving as subject matter experts on FRA regulations governing the use of train horns and quiet zones and coordinating regional assistance to public authorities interested in establishing quiet zones.

[56]We found, however, that how and when GCMs conducted these informal inspections varied significantly. For example, GCMs in one region told us they informally inspect quiet zones primarily when problems arise, whereas GCMs in another region told us they informally inspect all quiet zones in their region every three years using a checklist they developed.[57]As of August 2017, FRA had not terminated any quiet zones because of violations or fined any entities for quiet zone violations.

[57]As of August 2017, FRA had not terminated any quiet zones because of violations or fined any entities for quiet zone violations.

August 2017 that they planned to hire 24 new Inspectors.[58] As of August 2017, FRA had also developed the Inspector training curriculum, and began training three Inspectors. FRA program officials expressed uncertainty over when the remaining 21 Inspectors will be hired because of uncertainty regarding FRA's hiring and training priorities, among other things. In September 2017, FRA program officials told us that one of the newly hired Inspectors had completed the training and had begun inspecting quiet zones.

While FRA has started conducting formal quiet-zone inspections, we found that FRA has not developed guidance on how the inspections should be conducted, including guidance on how frequently these inspections should be conducted and what should be examined. As a result, such guidance is not included as part of the training curriculum developed for Inspectors. According to FRA program officials, this guidance has not been developed because program officials are still finalizing the inspection program. Although no guidance has been developed, FRA program officials told us that they are considering inspecting all new quiet zones between when the public authority submits a Notice of Quiet Zone Establishment and when the quiet zone is established. Additionally, FRA program officials told us that existing quiet zones would be inspected based on mission requirements, risk, and the availability of resources, but ideally every 3 years. With respect to how the quiet zones are to be inspected, FRA program officials said they plan to develop guidance for Inspectors that is akin to the other FRA safety disciplines.[59] FRA program officials told us that they are working toward establishing an Audit Division, which would be responsible for developing this guidance. However, as of August 2017, FRA program officials had not provided a timeline for when this division or guidance would be completed.

[58]Over this same time period, FRA officials told us that they will be simultaneously phasing out GCMs through attrition and retirement. In addition to hiring Inspectors, FRA also plans to hire Grade Crossing Specialists who will also have a role with inspecting quiet zones. However, as of August 2017, FRA program officials told us they were in the process of developing the Grade Crossing Specialist's position description and were unsure when these individuals will be hired.

[59]FRA has developed a manual for each of its other five disciplines. For example, FRA's manual for the operating practices discipline includes: pertinent laws and regulations, inspector best practices, field-reporting procedures and forms, and illustrative examples of non-compliance issues.

The absence of guidance on inspections is inconsistent with internal control standards. Specifically, the *Standards for Internal Control in the Federal Government* states that management should implement control activities through its policies that document each unit's responsibility, or further delineates day-to-day procedures.[60] These procedures may also include the timing of when a control activity occurs and state that management should communicate these policies to its staff. Without this type of guidance, FRA cannot have reasonable assurance that inspections are being conducted consistently across FRA's eight regions and as FRA intends.

Conclusions

Grade crossing collisions are one of the leading causes of fatalities in the railroad industry, and ensuring safety in these areas, including those within quiet zones, is a vital part of FRA's mission. While public authorities are primarily responsible for safety in quiet zones, FRA can help ensure that grade crossings in quiet zones are as safe as others. However, the methodology FRA uses to assess the safety of quiet zones has limitations because it does not account for changes to grade crossings' characteristics over time. By continuing to rely on this methodology, FRA may be missing an opportunity to ensure that established quiet zones are providing the same level of safety as when train horns were sounded.

In addition to its safety studies, FRA is also taking steps to formalize its process for conducting physical inspections of quiet zones. While FRA has started hiring and training a few Inspectors, it lacks guidance on how and when quiet zone inspections are to be performed. Without this guidance, FRA cannot ensure that quiet zones will be inspected consistently across FRA's eight regions.

Recommendations for Executive Action

We are making the following two recommendations to FRA:

The Administrator of FRA should revise the methodology for the analysis of safety in quiet zones to take into account relevant changes over time—including changes in train and automotive traffic, or in the physical characteristics of the grade crossing. (Recommendation 1)

[60] GAO-14-704G.

The Administrator of FRA should develop guidance for Inspectors on the nature and frequency of quiet zone inspections. (Recommendation 2)

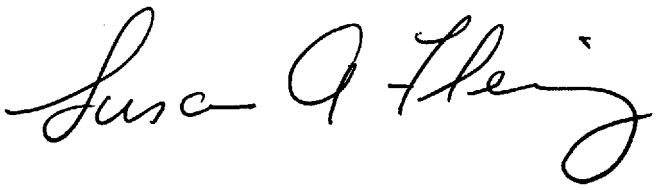
Agency Comments and Our Evaluation

We provided a draft of this report to the Department of Transportation for review and comment. The department provided a written response (see app. II), as well as technical comments that we incorporated as appropriate. The department concurred with the second recommendation regarding developing guidance for quiet zone inspectors and partially concurred with the first recommendation regarding revising the methodology for analyzing the safety of quiet zones. The department said it would consider our recommendation to revise its methodology as it explores options for updating its methodology.

We are encouraged that FRA is willing to consider revising its methodology for analyzing the safety of grade crossings in quiet zones. However, we continue to believe that our recommendation is valid and that to fully understand quiet zone safety FRA needs to revise its methodology to account for relevant characteristics of quiet—zone grade crossings. As we state in the report, the reliability of FRA's current methodology will likely decrease over time because it does not control for relevant changes to grade crossings in quiet zones including changes to vehicle or train traffic or speeds. These and other factors are critical determinants of grade-crossing safety. Further, developing a methodology that incorporates characteristics that affect safety at grade crossings in quiet zones may also provide FRA insight into the safety of grade crossings more generally. Since grade-crossing accidents are a major source of fatalities and, according to the department, are expected to increase as train- and highway-traffic increases, it will become increasingly important to have reliable information about grade-crossing safety, both in quiet zones and across grade crossings more generally.

We will send copies of this report to appropriate congressional committees, the Secretary of Transportation, and the Administrator of the Federal Railroad Administration. In addition, we will make copies available to others upon request, and the report will be available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-2834 or flemings@gao.gov. Contact points for our Office of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix IV.



Susan A. Fleming
Director, Physical Infrastructure Issues

Appendix I: Objectives, Scope, and Methodology

The Fixing America's Surface Transportation Act included provisions for GAO to review the effectiveness of the Federal Railroad Administration's (FRA) final rule governing the use of train horns at highway-rail grade crossings.[1] The objectives of this report were to determine: (1) what is known about the benefits and costs of quiet zones,[2] (2) what challenges, if any, public authorities and others encounter in establishing quiet zones, and (3) how, if at all, FRA is evaluating the effectiveness of federal train horn regulations.[3] The scope of this report was limited to new quiet zones—that is, quiet zones that were established since FRA published the final rule in August 2006. Federal regulations govern the use of train horns at public-highway-rail-grade crossings (grade crossings) and provide public authorities[4]—typically a city, town, or county—with the opportunity to create quiet zones where train horns are not sounded. We focused on new quiet zones to better understand the benefits, costs, challenges, and safety impacts associated with the regulations.

To obtain information about quiet zones, we reviewed FRA's data on quiet zones established from 2005 through 2017. To assess the reliability of these data, we examined FRA's reports, analyzed the data to identify any outliers, and interviewed FRA officials about how the data were collected and used. We determined that the data were sufficiently reliable for our purposes.

For each of our objectives, we reviewed pertinent law and FRA regulations and documents; interviewed FRA program officials in

[1]Pub. L. 114-94 § 11403(a) (2015).

[2]A "quiet zone" is a section of rail line that is at least one-half mile in length that contains one or more consecutive public grade crossings at which train horns are not routinely sounded when approaching the grade crossings. Public grade crossings are locations where a public highway, road, or street crosses one or more railroad tracks at-grade.

[3]The final rule was codified in parts 222 and 229 of Title 49, Code of Federal Regulations. An interim final rule was issued in December 2003. The final rule was initially issued in April 2005; however, after petitions for reconsideration were received, a revised final rule was issued in August 2006. 71 Fed. Reg. 47614 (Aug. 17, 2006). The train horn regulations also included provisions for pre-rule quiet zones—these are grade crossings at which state statutes or local ordinances restrict the routine sounding of train horns or at which locomotive horns did not sound due to formal or informal agreements between the public authority and the railroad(s) prior to the final rule. The train horn regulations excludes about 390 crossings in the Chicago Region (called the "Chicago Region Exemption"), which were governed by the Illinois Commerce Commission.

[4]Public authorities are the entity responsible for traffic control or law enforcement at-grade crossings.

headquarters; and conducted in-depth interviews with a nongeneralizable sample of 40 stakeholders. This sample included stakeholders from 8 freight railroads, 5 private industry consulting firms with experience helping public authorities establish quiet zones, 6 state agencies, 13 public authorities within these six states, and FRA Grade Crossing Managers (GCMs) in each of FRA's 8 regions. The railroads selected included all seven class I railroads, plus the Florida East Coast Railway.[5] The latter was selected due to its previous experience with whistle bans, and it was located in a state where we conducted interviews. The private industry consultants were selected based on several factors, including (1) experience with assisting public authorities in establishing quiet zones, (2) recommendations from FRA and other stakeholders we interviewed, and (3) geographic dispersion.

We selected six states as part of a nongeneralizable sample for interviews. These states included California, Colorado, Florida, Illinois, Maryland, and Texas. The states were selected based on a variety of factors, including the number of new quiet zones and the number of grade crossings in new quiet zones. Five of the six states accounted for about 48 percent of new quiet zones (California, Colorado, Florida, Illinois, and Texas). We also conducted interviews in Maryland before we conducted other interviews to test our interview protocol. Maryland was selected for this purpose to, among other things, minimize resources. Within these states, we conducted interviews with 13 judgmentally selected public authorities (see table 1). The public authorities were also selected based on factors such as the number of new quiet zones and recommendations from FRA and other stakeholders we interviewed.

[5]The freight railroad industry is divided into three classes based on annual operating revenues, as determined by the Surface Transportation Board. For 2016, this revenue threshold was at least $447.6 million for class I railroads, at least $35.8 million for class II railroads, and less than $35.8 million for class III railroads.

Table 1: States and Public Authorities Included in GAO's Review

State	Public authority
California	Richmond
	Rocklin
Colorado	Commerce City
	Denver (Regional Transportation District)
	Fort Collins
	Windsor
Florida	Baldwin
	Broward County
Illinois	Galesburg
	Oak Lawn
Maryland	Montgomery County
Texas	Aledo
	Fort Worth

Source: GAO. | GAO-18-97

For all our objectives we also conducted a literature review of pertinent studies in scholarly/peer-reviewed journals, conference papers, non-profit or think tank publications, and trade publications or industry articles to identify research on quiet zones. We restricted our review to results published between January 1, 1996, and October 17, 2016, and our search yielded 99 results. Of these 99 results, we reviewed each abstract or full article if available, to determine whether it was relevant to any of our objectives. Our analysis identified 10 results pertaining to safety, 11 results related to benefits and costs, and 1 result related to challenges.[6] With respect to the articles related to costs and benefits, we also looked at citations within the studies we reviewed to identity whether any of these were relevant to our objective on costs and benefits of quiet zones. Using this approach we identified one additional study.[7] Each abstract was reviewed by two analysts to determine whether it seemed relevant. Where disagreement existed with respect to whether the abstract was relevant, we included the abstract in our request for the complete study. We then developed criteria/requirements for each objective and reviewed

[6]As of February 2017, the result related to challenges could not be obtained through a U.S. library lender.

[7]See D. Clark, "Externality Effects on Residential Property Values: The Example of Noise Disamenities," *Growth and Change*, Vol. 37, No. 3 (September 2006). This paper was cited in FRA's RFIA.

each study against our criteria/requirements. Namely, we were only interested in studies that quantified the benefits or costs of quiet zones or that used data or analytics to measure safety at grade crossings in quiet zones or compared safety at-grade crossings in quiet zones to grade crossings where train horns sound. Further, each study was reviewed by an analyst and a statistician or economist to determine its relevance.[8]

With respect to our objective on the effectiveness of the train horn regulations, we determined that none of the studies met our underlying criteria. Specifically, none of the studies measured the safety at grade crossings in quiet zones or compared the results to grade crossings where the train horn sounded. Conversely, with respect to our objective on the costs and benefits of quiet zones, we determined that six studies were relevant.[9] To assess the reliability and methodological soundness of the studies we determined were relevant, we compared the studies with general guidelines based on standards for assessing research and analysis from the literature, past GAO reports on evaluating research programs, and our internal expertise in research design. These guidelines include, for example, examining a study based on: (1) the extent to which it was well designed and the methodology supports the objectives; (2) whether the assumptions were reasonable and explicitly stated; (3) whether the study used the best available data; and (4) whether the conclusions and recommendations were balanced and supported by data analysis.

To determine what is known about the benefits and costs of quiet zones, we reviewed the literature search discussed above and analyzed any studies obtained using the methodology described above. We also reviewed FRA's Regulatory Evaluation and Regulatory Flexibility Assessment for Use of Locomotive Horns at Highway-Rail Grade

[8]Studies related to the safety of quiet zones were reviewed by an analyst and statistician, whereas studies on the costs and benefits of quiet zones were reviewed by an analyst and economist.

[9]One of these results, U.S. Department of Transportation, Research and Special Programs Administration, John A. Volpe National Transportation Systems Center, Environmental Measurement and Modeling Division, *General Health Effects of Transportation Noise,* DTS-34-RR297-LR2, FRA/RDV-03/01 (Cambridge, MA, June 2002), was not a study but rather a summary of academic literature on the effects of transportation noise. As a result, we did not critique this study, but rather summarized the high level findings. Two of the studies we identified related to costs and benefits could not be secured through a U.S. library lender. Finally, one of the studies we reviewed did not meet our standards for data reliability, so we eliminated it from our analysis.

Crossings Final Rule (RFIA).[10] The RFIA was issued before the final rule and analyzed the potential economic effects of requiring the train horn to be sounded at all public grade crossings, of eliminating whistle bans, and of providing conditions under which the train horn can be silenced at-grade crossings. To review the RFIA, we compared it to selected principles from Office of Management and Budget's (OMB) guidance for developing regulatory analyses.[11] These principles included whether the analysis considered alternatives; whether the analysis estimated the incremental effect of the rule compared to a business-as-usual baseline; and whether the analysis analyzed uncertainty. In evaluating the RFIA, an analyst and economist independently reviewed the analyses and subsequently came to consensus about each element's adherence to OBM guidance. We also reviewed FRA's September 2013 user guide for quiet zones.[12] This guide provides a high-level overview of the quiet zone process, including an estimated cost range to establish quiet zones. We discussed the cost range with FRA, including the source of the information and its reliability. Since FRA program officials told us it was an "order of magnitude" estimate and not meant to represent actual costs to establish quiet zones, we did not determine the reliability of the information. As a result, the cost range information is used for illustrative purposes only, and we included a disclaimer about its reliability. Finally, we interviewed FRA GCMs in all eight of FRA's regional offices, states, public authorities, railroads, and private industry consultants about the benefits and costs of establishing quiet zones. Some of these stakeholders provided information about costs to establish quiet zones, but this was anecdotal, and we did not attempt to verify its completeness or accuracy.

To determine the challenges encountered by public authorities and other stakeholders in establishing quiet zones and improvements stakeholders suggested to the quiet zone process, we interviewed FRA GCMs, states,

[10]FRA, *Regulatory Evaluation and Regulatory Flexibility Assessment for Use of Locomotive Horns at Highway-Rail Grade Crossings Final Rule (49 C.F.R. Parts 222 and 229)* (Washington D.C.: July 21, 2003).

[11]Office of Management and Budget: *Circular A-4, Regulatory Analysis* (Washington, D.C.: Sept. 17, 2003); and Office of Management and Budget, *Circular No. A-94 Revised, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs* (Washington, D.C.: Oct. 29, 1992).

[12]FRA, *Guide to the Quiet Zone Establishment Process: An Information Guide*, Federal Railroad Administration, Highway-Rail Crossing and Trespasser Programs Division (Washington, D.C.: September 2013).

public authorities, railroads, and private industry consultants. We asked these stakeholders to identify the primary challenges in establishing quiet zones and for suggested improvements to the quiet zone process. We then analyzed the information obtained to identify common themes of challenges or suggested improvements. Based on this analysis, an initial list of categories for each challenge and improvement was then developed along with their definitions. The definitions identified specific types of comments to be included in each challenge or improvement category. After reviewing the initial list for overlaps and duplication, as well as to keep the list manageable, a final consolidated list was developed that consisted of eight types of challenges and seven types of improvements (see table 2). Using this list, an analyst then reviewed each interview and judgmentally assigned the information into one of the categories. A second analyst then independently reviewed these assignments using the consolidated list of categories and definitions. Any differences were then reconciled by the two analysts.[13]

[13]Most stakeholders identified more than one challenge or improvement during an interview, and these were reflected in each of the appropriate categories.

Table 2: Categories of Quiet Zone Challenges and Categories of Improvements Suggested by Stakeholders and Definitions

Category of challenge/improvement	Definition
Challenges	
Funding/cost	Items related to funding or cost of quiet zones or the process of establishing quiet zones.
Stakeholder cooperation	Items related to stakeholders, including mentions of coordination, cooperation, participation, delays, and similar items.
Process related	Items related to the quiet zone process from the initial identification of grade crossings for quiet zones to when a quiet zone is established.
FRA related	Items specifically related to FRA and FRA's role in the quiet zone process.
Guidance or assistance	Items that are related to guidance available, or could be made available, and technical assistance available, or could be made available, to stakeholders in the quiet zone process.
Safety/risk	Items related to safety of quiet zones, or risks associated with quiet zones. This includes mentions of liability or risk issues, liability insurance, reliability of safety devices, uniqueness or special characteristics of crossings, and similar items.
Other	Catch-all category that includes items not related to other challenges.
No challenge	Includes stakeholders that said establishing a quiet zone was not a challenge, or that did not mention any challenges.
Improvements	
Funding/cost	Items related to funding quiet zones or reducing or controlling costs of quiet zones or the process of establishing quiet zones.
Process related	Items related to the change or improvement of the process for establishing quiet zones. Includes such things as requiring diagnostic reviews and extending Notice of Quiet Zone Establishment period beyond 21 days.
FRA related	Items related to changes or improvements that FRA can make related to the process of establishing quiet zones or overseeing/monitoring quiet zones. Includes such things as expediting FRA reviews and requiring FRA oversight or inspections of quiet zones
Guidance or assistance	Changes or improvements that relate to guidance or assistance related to the quiet zone process.
Safety/risk	Items related to the safety or risk of quiet zones. Includes such things as considering pedestrians and pedestrian safety and requiring SSMs at all grade crossings.
Other	Catch-all category that includes items not related to other categories.
No improvements	Includes organizations that said no improvements are needed or who offered no improvements.

Source: GAO. | GAO-18-97

To further enhance our understanding of quiet zone challenges and improvements, we reviewed guidance issued by FRA about quiet zones and the train horn rule. This included FRA's *How to Create a Quiet Zone* document (posted to the FRA website in September 2012) and FRA's

user guide about quiet zones published in September 2013.[14] Additionally, we reviewed FRA's regulations governing train horns and quiet zones. We also interviewed FRA program officials about the quiet zone process, application processing, various aspects of the train horn rule, and obtained information from FRA about quiet zone guidance.

To determine how FRA is evaluating the effectiveness of the federal train horn regulations, we reviewed FRA's analysis of the safety of quiet zones at highway-rail-grade crossings completed in 2011 and 2013, which compared the safety of grade crossings in quiet zones to the safety of grade crossings where the train horn is sounded. We also discussed with FRA program officials the methodologies used to prepare these studies, and concerns with the data, conclusions, and plans to conduct future analyses. To assess the reliability and methodological soundness of the studies, we used the same approach as above. Both analyses were reviewed by a statistician and economist to corroborate the review. In addition to developing criteria for reviewing the analyses, we also reviewed guidance by FRA and others regarding analyzing incident data at grade crossings and about the limitations of a paired t-test—FRA's methodology for comparing the grade crossings.[15]

To assess the extent to which FRA's methodology generally reflects internal control principles, we reviewed it against practices for presenting accurate information and communicating with internal and external stakeholders outlined in the *Standards for Internal Control in the Federal Government.*[16] We also conducted data reliability assessments with respect to the underlying data FRA used in its analyses. FRA's analyses used data that originated from two distinct FRA databases: ccmMercury (CCM) and the Safety Data Analysis website. CCM is a correspondence management system which includes all data on quiet zones—such as the establishment date and grade crossings included, among others. This information is contained in the Notice of Quiet Zone Establishment that the public authority establishing the quiet zone is required to provide to

[14]FRA, *How to Create a Quiet Zone* (posted online September 27, 2012), and *Guide to the Establishment of Quiet Zones: An Information Guide* (Washington, D.C.: September 2013).

[15]A paired t-test is a statistical method used to compare two population means where observations in one population can be paired with observations in the other population.

[16]GAO, *Standards for Internal Control in the Federal Government*, GAO-14-704G (Washington, D.C.: September 2014).

FRA. Alternatively, the Safety Data Analysis website contains two datasets: the Grade Crossing Inventory System (GCIS) and the Railroad Accident/Incident Reporting System (RAIRS). The GCIS contains information on every crossing in the nation and was used to identify the characteristics of the individual crossings within the quiet zone, whereas the RAIRS contains details about each crossing collision incident that has occurred. To assess the reliability of the data used in our review, we examined FRA reports, reviewed prior GAO data reliability material, and interviewed FRA stakeholders about how the data were collected, stored, and used. We determined that the data were sufficiently reliable for the purposes of our objectives.

Finally, to understand how FRA conducts oversight of quiet zones, we interviewed FRA program officials about oversight of quiet zones, guidance to staff and public authorities, and any planned changes for how the agency conducts oversight of quiet zones. We also interviewed GCMs in each of FRA's eight regions to understand how they carry out oversight of quiet zones and to learn about the extent to which differences exist across regions. We also reviewed prior GAO reports that summarized FRA's oversight approach to the rail industry, including its more traditional inspection disciplines. We also asked stakeholders included in our sample of FRA GCMs, states, public authorities, railroads, and private industry consultants about the challenges of establishing quiet zones and potential improvements to the quiet zone process. We then assessed FRA's oversight approach using the *Standards for Internal Control in the Federal Government.*

We conducted this performance audit from July 2016 to October 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Comments from the Department of Transportation

U.S. Department of Transportation
Office of the Secretary of Transportation

Assistant Secretary for Administration

1200 New Jersey Avenue, SE
Washington, DC 20590

Susan A. Fleming
Director, Physical Infrastructure Issues
U.S. Government Accountability Office (GAO)
441 G Street NW
Washington, DC 20548

OCT 16 2017

Dear Ms. Fleming:

Highway-rail grade crossing and trespass incidents account for almost all rail-related deaths. The number of grade crossing deaths has averaged over 256 and the number of trespass deaths has averaged over 439 every year since 2008. Compared to the first three quarters of Fiscal Year (FY) 2016, the grade crossing incidents rate increased by 5 percent during the first three quarters of FY 2017. The number of highway-rail grade crossing incidents will likely grow with future train and highway traffic increases.

The Federal Railroad Administration (FRA) works with state and local governments, railroads, and safety organizations to reduce the number of highway-rail grade crossing collisions and resulting casualties. The National Highway Traffic Safety Administration and FRA launched a $7 million media buy in January 2017 for "Stop! Trains Can't" public service announcements. An additional $6 million is available for FY 2018. The campaign targets young males (the demographic with the most crossing incidents) in states with the most dangerous crossings and states where 75 percent of crossing accidents occur.

In addition, FRA's Grade Crossing Safety Task Force is focusing on validating crossing latitude and longitude data, collaborating with mapping and navigation technology providers to expand use of crossing data, examining human behavior predictive modeling, supporting enhanced law enforcement and first responder strategies, strengthening State crossing safety action plans, and working with the Federal Highway Administration to update the Railroad-Highway Crossing Handbook. FRA also created the grade crossing inspector discipline for which we are currently hiring and training several new employees.

To maintain the level of grade crossing safety comparable to use of train horns, FRA works with public authorities when a community chooses to establish a quiet zone. Since 2005, communities have established 570 new quiet zones under FRA regulations. FRA's 2014 study of quiet zones demonstrates that safety has not been compromised.

However, the GAO made two recommendations to FRA:

1. The Administrator of FRA should revise the methodology for the analysis of safety in quiet zones to take into account relevant changes over time – including changes in train and automotive traffic, or the physical characteristics of the crossing.
2. The Administrator of FRA should develop guidance for inspectors on the nature and frequency of quiet zone inspections.

Upon review of GAO's draft report, FRA concurs with the first recommendation to the extent that it will consider GAO's recommendation as it explores a range of options for updating its methodology for analyzing the safety of quiet zones. FRA also concurs with the second recommendation to develop guidance for inspectors on the nature and frequency of quiet zone inspections. We will provide a detailed response to both recommendations within 60 days of the final report's issuance.

We appreciate the opportunity to respond to the GAO draft report. Please contact Madeline M. Chulumovich, Director, Audit Relations and Program Improvement, at (202) 366-6512 with any questions.

Sincerely,

Keith Washington
Deputy Assistant Secretary for Administration

Appendix III: List of Organizations Contacted by GAO

Table 3: List of Organizations Contacted by GAO

Name of organization	Type of organization
Federal government	
FRA Headquarters	Federal government
FRA Region 1	Federal government
FRA Region 2	Federal government
FRA Region 3	Federal government
FRA Region 4	Federal government
FRA Region 5	Federal government
FRA Region 6	Federal government
FRA Region 7	Federal government
FRA Region 8	Federal government
The Volpe National Transportation Systems Center	Federal government
FHWA headquarters	Federal government
State agencies	
California Public Utilities Commission	State agency
Colorado Public Utilities Commission	State agency
Illinois Commerce Commission	State agency
Illinois Department of Transportation	State agency
Maryland State Highway Administration	State agency
Texas Department of Transportation	State agency
Local organizations	
Broward County Metropolitan Planning Organization, Florida	Local government
City of Richmond, California	Local government
City of Rocklin, California	Local government
City of Commerce City, Colorado	Local government
City of Fort Collins, Colorado	Local government
City of Windsor, Colorado	Local government
Denver Regional Transportation District, Colorado	Local government
City of Baldwin, Florida	Local government
City of Galesburg, Illinois	Local government
City of Oak Lawn, Illinois	Local government
Montgomery County Department of Transportation, Maryland	Local government
City of Aledo, Texas	Local government
City of Fort Worth, Texas	Local government
Railroads	
BNSF	Railroad

Canadian National Railway	Railroad
Canadian Pacific Railroad	Railroad
CSX, Inc.	Railroad
Florida East Coast Railway	Railroad
Kansas City Southern, Inc.	Railroad
Norfolk Southern Railroad	Railroad
Union Pacific Railroad	Railroad
Private industry consultants	
CTC, Inc.	Consulting firm
Felsburg Holt & Ullevig	Consulting firm
Quiet Zone Technologies, Inc.	Consulting firm
Robinson Engineering	Consulting firm
SRF Consulting, Inc.	Consulting firm
Associations	
American Short Line and Regional Railroad Association	Trade association
Association of American Railroads	Trade association
National Railroad Construction and Maintenance Association	Trade association
Others	
David E Clark (Marquette University)	Academic

Source: GAO. | GAO-18-97

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Susan A. Fleming, (202) 512-2834, flemings@gao.gov

Staff Acknowledgments

In addition to the contact named above, Susan Zimmerman (Assistant Director), Krister Friday, Sarah Gilliland, Timothy Guinane, Richard Jorgenson, SaraAnn Moessbauer, Malika Rice, Amy Rosewarne, Melissa Swearingen, Larry Thomas, and Crystal Wesco made significant contributions to this report.

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Public Affairs	Chuck Young, Managing Director, youngc1@gao.gov, (202) 512-4800 U.S. Government Accountability Office, 441 G Street NW, Room 7149 Washington, DC 20548
Strategic Planning and External Liaison	James-Christian Blockwood, Managing Director, spel@gao.gov, (202) 512-4707 U.S. Government Accountability Office, 441 G Street NW, Room 7814, Washington, DC 20548

GUIDE TO THE QUIET ZONE ESTABLISHMENT PROCESS

AN INFORMATION GUIDE

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Federal Railroad Administration

Highway-Rail Crossing and Trespasser Programs Division

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Purpose of the Guide

This brochure was developed to serve as a guide for local decision makers seeking a greater understanding of train horn sounding requirements and how to establish quiet zones. Its purpose is to provide a general overview and thus does not contain every detail about the quiet zone establishment process. For more detailed and authoritative information, the reader is encouraged to review the official regulations governing the use of locomotive horns at public highway-rail grade crossings and the establishment of quiet zones that are contained in 49 CFR Part 222. A copy of the rule can be downloaded or printed at http://www.fra.dot.gov/eLib/Details/L02809.

About Quiet Zones

FRA is committed to reducing the number of collisions at highway-rail grade crossings, while establishing a consistent standard for communities who opt to preserve or enhance quality of life for their residents by establishing quiet zones within which routine use of train horns at crossings is prohibited.

Federal regulation requires that locomotive horns begin sounding 15–20 seconds before entering public highway-rail grade crossings, no more than one-quarter mile in advance. Only a public authority, the governmental entity responsible for traffic control or law enforcement at the crossings, is permitted to create quiet zones.

A quiet zone is a section of a rail line at least one-half mile in length that contains one or more consecutive public highway-rail grade crossings at which locomotive horns are not routinely sounded when trains are approaching the crossings. The prohibited use of train horns at quiet zones only applies to trains when approaching and entering crossings and does not include train horn use within passenger stations or rail yards. Train horns may be sounded in emergency situations or to comply with other railroad or FRA rules even within a quiet zone. Quiet zone regulations also do not eliminate the use of locomotive bells at crossings. Therefore, a more appropriate description of a designated quiet zone would be a “reduced train horn area.”

Communities wishing to establish quiet zones must work through the appropriate public authority that is responsible for traffic control or law enforcement at the crossings.

Historical Context

Historically, railroads have sounded locomotive horns or whistles in advance of grade crossings and under other circumstances as a universal safety precaution. Some States allowed local communities to create whistle bans where the train horn was not routinely sounded. In other States, communities created whistle bans through informal agreements with railroads.

In the late 1980's, FRA observed a significant increase in nighttime train-vehicle collisions at certain gated highway-rail grade crossings on the Florida East Coast Railway (FEC) at which nighttime whistle bans had been established in accordance with State statute In 1991, FRA issued Emergency Order #15 requiring trains on the FEC to sound their horns again. The number and rate of collisions at affected crossings returned to pre-whistle ban levels.

In 1994, Congress enacted a law that required FRA to issue a Federal regulation requiring the sounding of locomotive horns at public highway-rail grade crossings. It also gave FRA the ability to provide for exceptions to that requirement by allowing communities under some circumstances to establish "quiet zones."

The Train Horn Rule became effective on June 24, 2005. The rule set nationwide standards for the sounding of train horns at public highway-rail grade crossings. This rule changed the criteria for sounding the horn from distance-based to time-based. It also set limits on the volume of a train horn. The rule also established a process for communities to obtain relief from the routine sounding of train horns by providing criteria for the establishment of quiet zones. Locomotive horns may still be used in the case of an emergency and to comply with Federal regulations or certain railroad rules.

Public Safety Considerations

Because the absence of routine horn sounding increases the risk of a crossing collision, a public authority that desires to establish a quiet zone usually will be required to mitigate this additional risk. At a minimum, each public highway–rail crossing within a quiet zone must be equipped with active warning devices: flashing lights, gates, constant warning time devices (except in rare circumstances) and power out indicators.

In order to create a quiet zone, one of the following conditions must be met

1. ***The Quiet Zone Risk Index (QZRI)*** **is less than or equal to the** ***Nationwide Significant Risk Threshold (NSRT)*** with or without additional safety measures such as Supplementary Safety Measures (SSMs) or Alternative Safety Measures (ASMs) described below. The QZRI is the average risk for all public highway-rail crossings in the quiet zone, including the additional risk for absence of train horns and any reduction in risk due to the risk mitigation measures. The NSRT is the level of risk calculated annually by averaging the risk at all of the Nation's public highway-rail grade crossings equipped with flashing lights and gates where train horns are routinely sounded.
2. ***The Quiet Zone Risk Index (QZRI) is less than or equal to the Risk Index With Horns (RIWH)*** with additional safety measures such as SSMs or ASMs. The RIWH is the average risk for all public highway-rail crossings in the proposed quiet zone when locomotive horns are routinely sounded.
3. ***Install SSMs at every public highway-rail crossing****.* This is the best method to reduce to reduce risks in a proposed quiet zone and to enhance safety.

SSMs are pre-approved risk reduction engineering treatments installed at certain public highway-rail crossings within the quiet zone and can help maximize safety benefits and minimize risk. SSMs include: medians or channelization devices, one-way streets with gates, four quadrant gate systems, and temporary or permanent crossing closures. Examples of SSMs are shown on the next page.

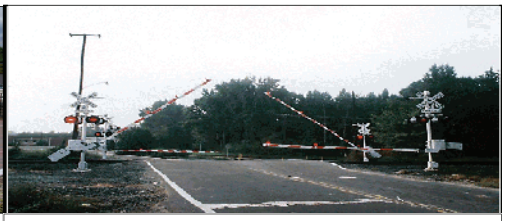
ASMs are safety systems, other than SSMs, that are used to reduce risk in a quiet zone. ASMs typically are improvements that do not fully meet the requirements to be SSMs and their risk reduction effectiveness must be submitted in writing and approved by FRA.

FRA strongly recommends that all crossings in the quiet zone be reviewed by a diagnostic team. A diagnostic team typically consists of representatives from the public authority, railroad, and State agency responsible for crossing safety and FRA grade crossing managers.

Public Safety Considerations continued

Examples of SSMs

Crossing Closure



Four Quadrant Gate System

Gates with Channelization Devices

Gates with Medians

Wayside Horns The train horn rule also provides another method for reducing the impact of routine locomotive horn sounding when trains approach public highway-rail grade crossings. A wayside horn may be installed at highway-rail grade crossings that have flashing lights, gates, constant warning time devices (except in rare circumstances), and power out indicators. The wayside horn is positioned at the crossing and will sound when the warning devices are activated. The sound is directed down the roadway, which greatly reduces the noise footprint of the audible warning. Use of wayside horns is not the same as establishing a quiet zone although they may be used within quiet zones.

Cost Considerations

The enabling Federal statute did not provide funding for the establishment of quiet zones. Public authorities seeking to establish quiet zones should be prepared to finance the installation of SSMs and ASMs used. Costs can vary from $30,000 per crossing to more than $1 million depending on the number of crossings and the types of safety improvements required.

Legal Considerations

The courts will ultimately determine who will be held liable if a collision occurs at a grade crossing located within a quiet zone, based upon the facts of each case, as a collision may have been caused by factors other than the absence of an audible warning. FRA's rule is intended to remove failure to sound the horn as a cause of action in lawsuits involving collisions that have occurred at grade crossings within duly established quiet zones.

The Quiet Zone Establishment Process

Under the Train Horn Rule, only public authorities are permitted to establish quiet zones. Citizens who wish to have a quiet zone in their neighborhood should contact their local government to pursue the establishment of a quiet zone. The following is a typical example of the steps taken to establish a quiet zone:

1. ***Determine*** which crossings will be included in the quiet zone. All public highway-rail crossings in the quiet zone must have, at a minimum, an automatic warning system consisting of flashing lights and gates. The warning systems must be equipped with constant warning time devices (except in rare circumstances) and power out indicators. The length of the quiet zone must be at least one-half mile in length.

2. ***Identify*** any private highway-rail grade crossings within the proposed quiet zone. If they allow access to the public or provide access to active industrial or commercial sites, a diagnostic review must be conducted and the crossing(s) treated in accordance with the recommendations of the diagnostic team.

3. ***Identify*** any pedestrian crossings within the proposed quiet zone and conduct a diagnostic review of those crossings too. They also must be treated in accordance with the diagnostic team's recommendations. *NOTE:* While it is not required by the regulations, FRA recommends that every crossing within a proposed quiet zone be reviewed for safety concerns.

4. ***Update*** the U.S. DOT Crossing Inventory Form to reflect current physical and operating conditions at each public, private, and pedestrian crossing located within a proposed quiet zone.

5. ***Provide*** a Notice of Intent (NOI) to all of the railroads that operate over crossings in the proposed quiet zone, the State agency responsible for highway safety and the State agency responsible for crossing safety. The NOI must list all of the crossings in the proposed quiet zone and give a brief explanation of the tentative plans for implementing improvements within the quiet zone. Additional required elements of the NOI can be found in 49 CFR 222.43(b). The railroads and State agencies have 60 days in which to provide comments to the public authority on the proposed plan.

6. ***Alternative Safety Measures*** – If ASMs are going to be used to reduce risk, an application to FRA must be made. The application must include all of the elements provided in 49 CFR 222.39(b)(1) and copies of the application must be sent to the entities listed in 49 CFR 222.39(b)(3). They will have 60 days to provide comments to FRA on the application. FRA will provide a written decision on the application typically within three to four months after it is received.

The Quiet Zone Establishment Process continued

7. ***Determine*** how the quiet zone will be established using one of the following criteria: (Note that Options 2 through 4 will require the use of the FRA Quiet Zone Calculator available at http://safetydata.fra.dot.gov/quiet/.)

1. Every public highway-rail crossing in the proposed quiet zone is equipped with one or more SSMs.
2. The Quiet Zone Risk Index (QZRI) of the proposed quiet zone is less than or equal to the Nationwide Significant Risk Threshold (NSRT) without installing SSMs or ASMs.
3. The QZRI of the proposed quiet zone is less than or equal to the Nationwide Significant Risk Threshold (NSRT) after the installation of SSMs or ASMs.
4. The QZRI of the proposed quiet zone is less than or equal to the Risk Index with Horns (RIWH) after the installation of SSMs or ASMs.

8. ***Complete*** the installation of SSMs and ASMs and any other required improvements determined by the diagnostic team at all public, private, and pedestrian crossings within the proposed quiet zone.

9. ***Ensure*** that the required signage at each public, private, and pedestrian crossing is installed in accordance with 49 CFR Sections 222.25, 222.27, and 222.35, and the standards outlined in the Manual on Uniform Traffic Control Devices. These signs may need to be covered until the quiet zone is in effect.

10. ***Establish*** the quiet zone by providing a Notice of Quiet Zone Establishment to all of the parties that are listed in 49 CFR Section 222.43(a)(3). Be sure to include all of the required contents in the notice as listed in 49 CFR Section 222.43(d). The quiet zone can take effect no earlier than 21 days after the date on which the Notice of Quiet Zone Establishment is mailed.

*****Appendix C to the Train Horn Rule provides detailed, step by step guidance on how to create a quiet zone.*****

Required Documentation

Public authorities interested in establishing a quiet zone are required to submit certain documentation during the establishment process. FRA has provided checklists for the various documents that can be found at http://www.fra.dot.gov/Elib/Details/L03055.

FRA's Regional Grade Crossing Managers are available to provide technical assistance. A State's department of transportation or rail regulatory agency also may be able to provide assistance to communities pursuing quiet zones.

Public authorities are encouraged to consult with the agencies in their State that have responsibility for crossing safety. Some States may have additional administrative or legal requirements that must be met in order to modify a public highway-rail grade crossing.

Role of Railroads

Communities seeking to establish a quiet zone are required to send a Notice of Intent and a Notice of Quiet Zone Establishment to railroads operating over the public highway-rail grade crossings within the proposed quiet zone. Railroad officials can provide valuable input during the quiet zone establishment process and should be included on all diagnostic teams. Listed below are links to the Class I Railroads and Amtrak.

BNSF Railway (BNSF)	Canadian Pacific (CP)
CSX Transportation (CSX)	Norfolk Southern (NS)
Canadian National (CN)	Union Pacific (UP)
Kansas City Southern (KCS)	Amtrak (ATK)

FINAL NOTE

The information contained in this brochure is provided as general guidance related to the Quiet Zone Establishment Process and should not be considered as a definitive resource. FRA strongly recommends that any public authority desiring to establish quiet zones take the opportunity to review all aspects of safety along its rail corridor. Particular attention should be given to measures that prevent trespassing on railroad tracks since investments made to establish a quiet zone may be negated if the horn has to be routinely sounded to warn trespassers.

POINTS OF CONTACT

General Questions:

Inga Toye, 202-493-6305
Debra Chappell, 202-493-6018
Ron Ries, 202-493-6285

Regional Contacts

Region 1 Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont
1-800-724-5991

Region 2 Delaware, Maryland, Ohio, Pennsylvania, Virginia, West Virginia , and Washington, D.C.
1-800-724-5992

Region 3 Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee
1-800-724-5993

Region 4 Illinois, Indiana, Michigan, Minnesota, and Wisconsin
1-800-724-5040

Region 5 Arkansas, Louisiana, New Mexico, Oklahoma, and Texas
1-800-724-5995

Region 6 Colorado, Iowa, Kansas, Missouri, and Nebraska
1-800-724-5996

Region 7 Arizona, California, Nevada, and Utah
1-800-724-5997

Region 8 Alaska, Idaho, Montana, North Dakota, South Dakota, Oregon, Washington, and Wyoming
1-800-724-5998

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05

Environment and Climate Commission

CONSENT CALENDAR
March 12, 2024

To: Honorable Mayor and Members of the City Council

From: Environment and Climate Commission (ECC)

Submitted by: Cecilia Lunaparra, Chair, ECC

Subject: Referral to Develop Curb Management Plan

RECOMMENDATION
Refer to the City Manager to fund and develop a Curb Management Plan.

FISCAL IMPACTS OF RECOMMENDATION
Development of a curb management plan will require substantial staff time and likely additional consultant support (tentatively estimated at $100,000-$250,000). Implementation of the plan and ongoing upkeep may have additional costs and staff time required. Refer to the City Manager for budgetary projecting; a long-term funding plan is necessary.

CURRENT SITUATION AND ITS EFFECTS
Transportation has stubbornly remained Berkeley's largest source of greenhouse gas (GHG) emissions, contributing over 60% of the city's total emissions. The City of Berkeley has adopted goals of being a Fossil Fuel Free city and becoming a net carbon sink by 2030, achieving carbon neutrality by 2045, and achieving an 80% reduction in GHG emissions by 2050. However, GHG emissions from transportation are currently expected to increase, and have not meaningfully declined as a proportion of total city emissions since 2008.

Berkeley's Strategic Plan sets the goal of being a global leader in addressing climate change, advancing environmental justice, and protecting the environment. Addressing climate change as it applies to transportation, and in particular driving emissions, will require the city to engage in a multipronged strategy, including:

- increasing and improving bus service
- improving the ability to bike safely throughout the city
- developing complete streets improvements
- reducing excess parking spaces where appropriate to encourage alternative transportation

The City has developed several individual plans to accomplish these goals, including the 2017 Berkeley Bicycle Plan, the 2020 Pedestrian Plan, the Berkeley Strategic Transportation (BeST) Plan, the 50/50 Sidewalk Program and the Long-Term Paving Plan, the ADA Transition Plan, the Gilman Street Interchange Project, the Streetlight Comprehensive Plan, and Southside Complete Streets. One key aspect that has received less focus in these plans is curb management.

Curb management plays an important role in ensuring that roads are able to be effectively and safely used by all road users. Presently, based on data from the Mineta Transportation Institute at San Jose State University, Berkeley has an estimated 72,193 on-street parking spaces, with another 71,773 off-street parking spaces (a total of 143,966 spaces), or 21.3 spaces per acre. The Bay Area median Census block group-level parking density was 19.7 spaces per acre, while Berkeley's median Census block group-level parking density is 23.5 spaces per acre.

At the same time, Berkeley households had roughly 57,500 registered vehicles, or about 2.5 parking spaces per automobile.

Parking abundance and underpricing encourages automobile usage, driving up greenhouse gas emissions. At the same time, in many parts of Berkeley, there is frequently insufficient parking available due to low parking turnover (extended parking duration), often resulting in double-parking that endangers cyclists and other drivers, and can delay transit riders or impair emergency vehicle access. Many areas of Berkeley need a review and adjustment of the allocations of different curbside uses to better align this public resource with City goals and the needs of existing businesses and residents.

Other cities, such as San Francisco and New York, have begun to prioritize the creation of more loading zones to reduce parking spots that accommodate driving trips into the city, while improving the efficiency of within-city short-term trips such as meal pick-up. Understanding how curb use is apportioned in Berkeley, especially in heavily trafficked areas, will help the City understand how to shift curb usage away from car storage and towards more dynamic use. A curb management program could function as a Strategic Plan Priority Project advancing the City of Berkeley's goal to be a global leader in addressing climate change, advancing environmental justice, and protecting the environment.

A presentation and reference map have been created by the Environment and Climate Commission's ad-hoc Transportation Subcommittee, quantifying the total number of loading zones on more than 30 streets within Berkeley, including all commercially-zoned corridors. A member of the subcommittee counted the total number of loading zones on each street using Google Satellite Imagery, Google Street view, and in some cases physically walking along streets to confirm loading zone presence. Based on this methodology, there are roughly 330-360 loading zones (yellow curbs) and 220-240 <1

hour parking spots (mostly green curbs). There are additionally 82 disabled parking spots on the studied streets. Most of these loading zones (59%) are on a street that contains a bike lane. However, few of these loading zones are directly in front of large apartment buildings or restaurants with high traffic; on the whole, the existing loading zones are sub-optimally located. The highest density of loading zones in the studied streets occurs on Telegraph Avenue over five blocks in the Southside neighborhood, where roughly 50% of storefronts have direct curb access to a loading zone.

BACKGROUND

On June 12, 2018, Berkeley City Council unanimously declared a Climate Emergency, calling "to end citywide greenhouse gas emissions as quickly as possible." Berkeley also set a goal of being a Fossil Fuel Free city, achieving carbon neutrality by 2045.

Transportation is the single largest source of greenhouse gas emissions in Berkeley, contributing around 60% of the city's total emissions. Unfortunately, this share – and the total level of emissions – is currently expected to grow.

The proposed policy would request that the Transportation Division develop a curb management program to improve the City's understanding of curb usage and help shift city curb infrastructure away from private car parking and towards more dynamic usage.

The ECC encourages Transportation Division staff and the Transportation Commission to consider:

1) Inventory the City's existing curb allocations.
2) Ensure adequate loading zones (yellow curbs) and <1 hour parking zones (green curbs) in all appropriate areas of the city.
3) Ensure adequate disabled parking (blue curbs) and review the City's existing process for blue curb requests in coordination with and under the guidance of the Disability Commission.
4) Ensure daylighting of all intersections (red curbs) in accordance with AB 413 to improve visibility of road users and reduce traffic crashes.
5) Support emergency vehicle access and emergency evacuations in the Very High Fire Hazard Severity Zone.
6) Additional parking meters, bicycle parking, or other curb management and use practices that may be appropriate to align curb uses with City goals and priorities.

ENVIRONMENTAL SUSTAINABILITY AND CLIMATE IMPACTS

Reducing on street parking to favor loading zones will shift travel away from automobiles, reducing greenhouse gas emissions and improving environmental sustainability.

RATIONALE FOR RECOMMENDATION
An initial review of loading zone availability done by the ECC ad-hoc subcommittee, and City staff expressed interest in the development of a curb management plan.

ALTERNATIVE ACTIONS CONSIDERED
The ECC considered taking no action and waiting for the staffing crisis in the Transportation Division to be addressed before making this referral. However, Transportation Staff conveyed interest in the topic of curb management, prompting the ECC to forward this recommendation.

CITY MANAGER
The City Manager takes no position on the content and recommendations of the Commission's Report and recommends that it be referred to the budget process.

CONTACT PERSON
Sarah Moore, Commission Secretary, Environment and Climate Commission, (510) 981-7494

Attachments:
1: Parking and Loading Zone Pilot Presentation
2: Loading Zone Interactive Map

Parking and loading zone pilot analysis

ECC Transportation and Public Space subcommittee
Prepared by Commissioner Brianna McGuire, D3

Agenda

- Background, context, and methodology
- General maps
- Housing mini-analysis
- Telegraph restaurant mini-analysis
- Next steps

https://docs.google.com/presentation/d/1xVruoBWcIIIB-fLBYYD7hXJ0sDi6QJO3YNYcla1Zsh0/edit?pli=1#slide=id.p

Background, context, and methodology

Background - why do this?

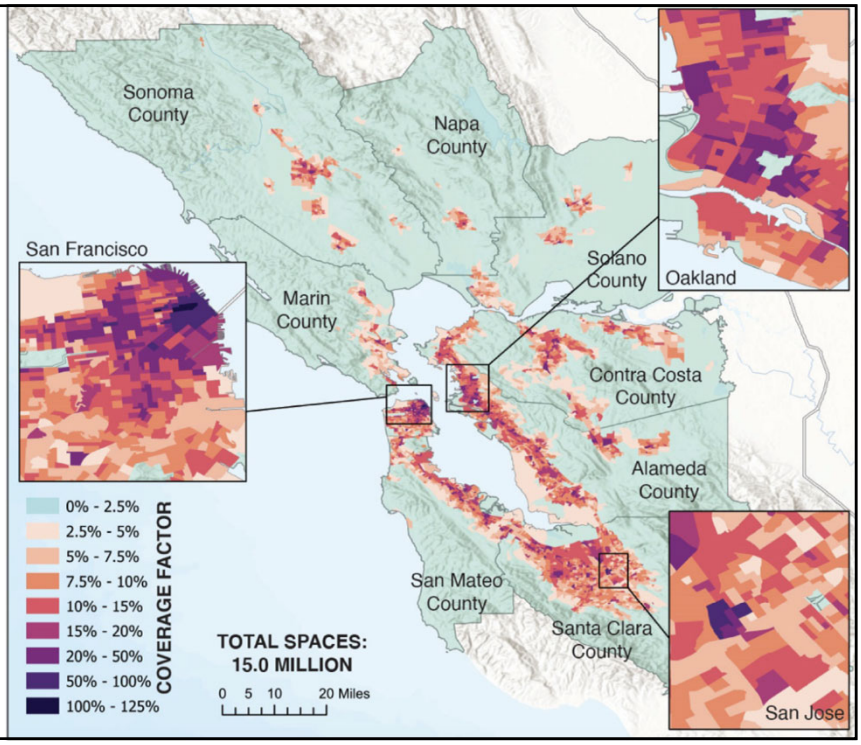
- To make recommendations for the locations of new loading zones
- To start building the infrastructure needed for a cargo-bike powered delivery structure in the city
- To identify win-win opportunities to reduce demand for private personal automobile trips while simultaneously improving traffic congestion and safety

Berkeley has a lower-to-similar ratio of loading zones to metered parking compared to San Francisco and New York

City	Total parking	Metered parking	Total loading zones	Total planned by 2024	Ratio metered: loading	Total green zones
Berkeley	>15,000	3,800*	330-360	?	0.086	220-240
San Francisco	442,000	27,550	9,324 (717)	?	0.338 (0.026)	625
New York	5,375,612	81,875	7,902	9,402 (+500/yr)	0.097	?

*Metered parking includes city-owned garage space. This is not the case for the other cities.

"The Bay Area has 2.6x more parking than it needs."



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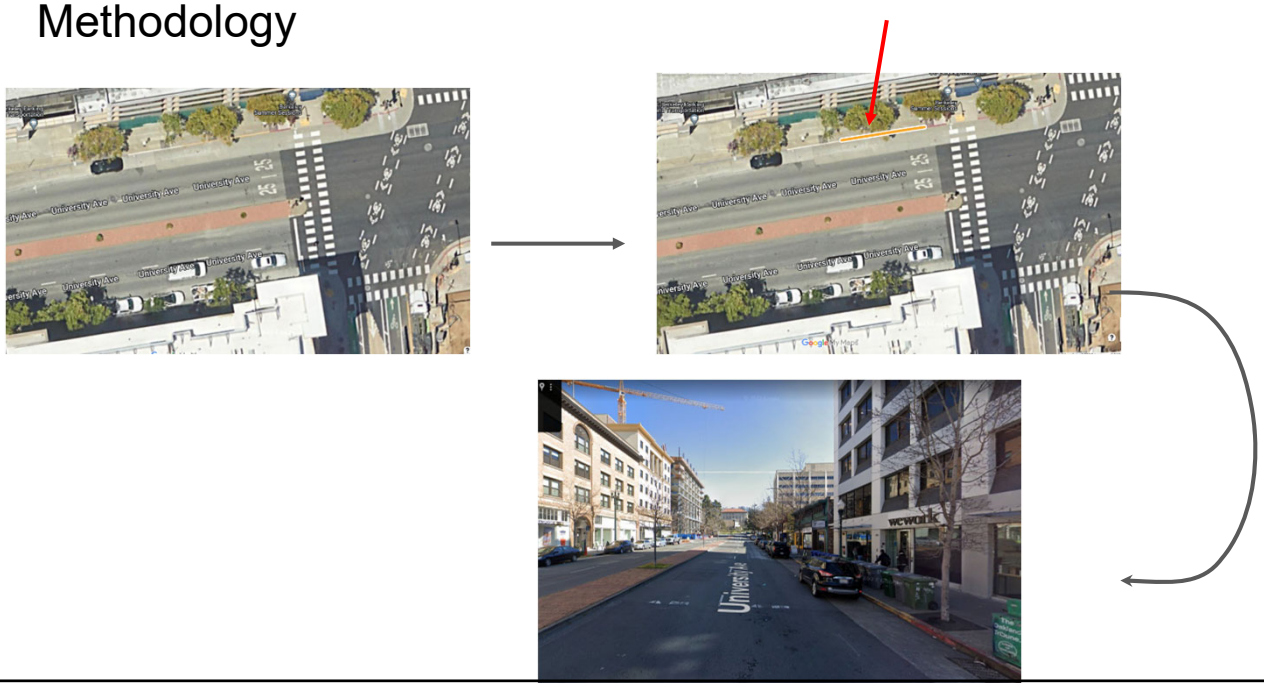
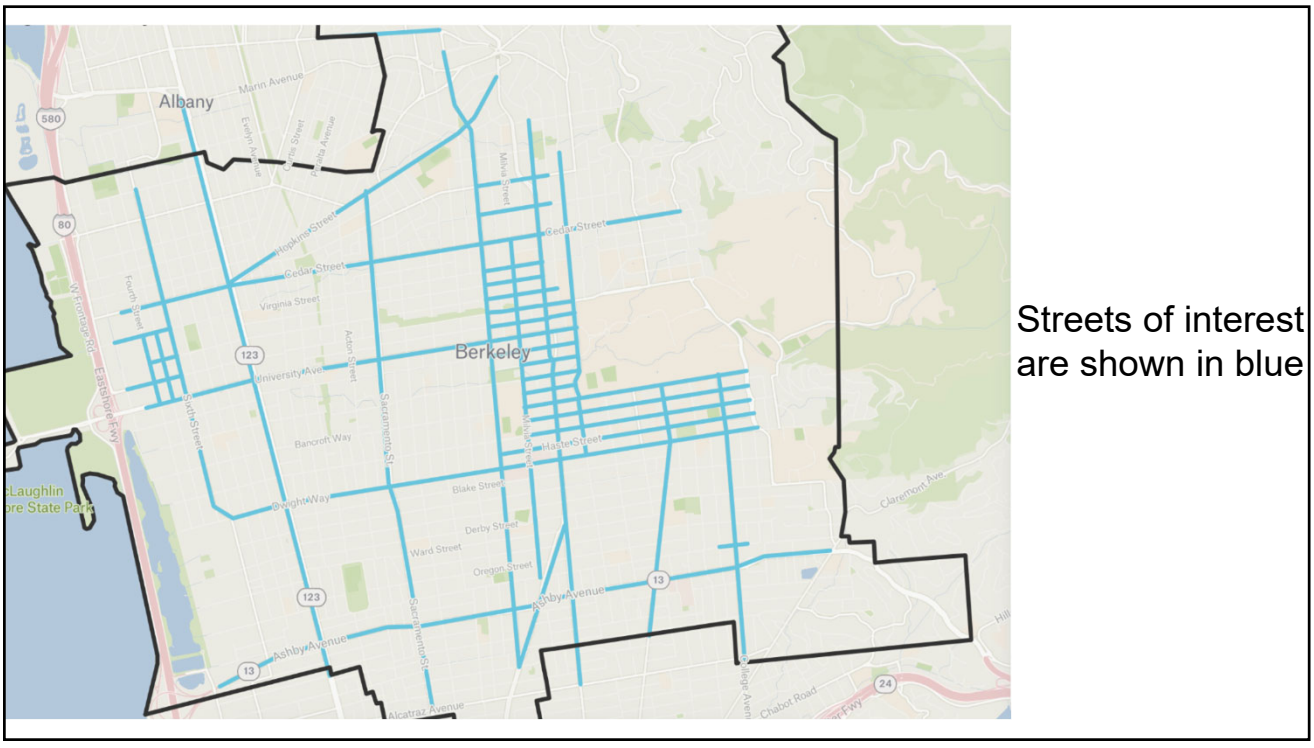
Methodology





Streets of interest are shown in blue

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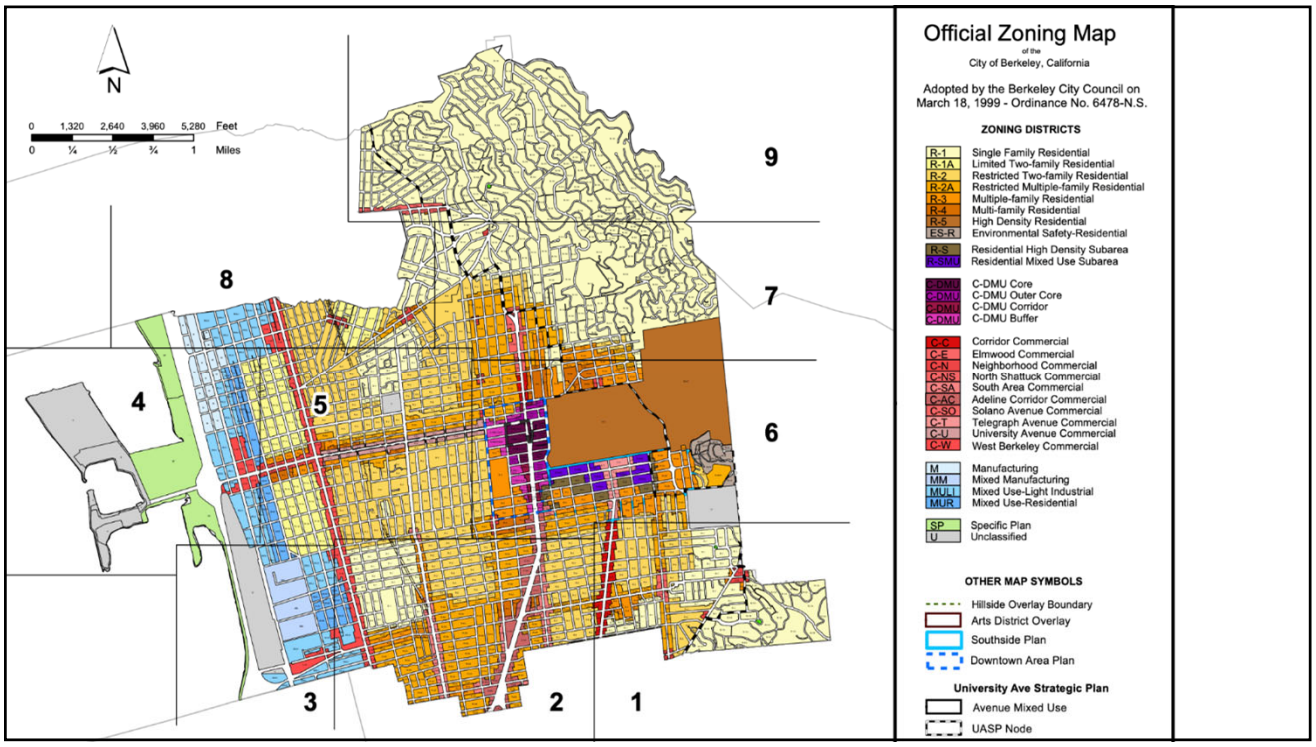

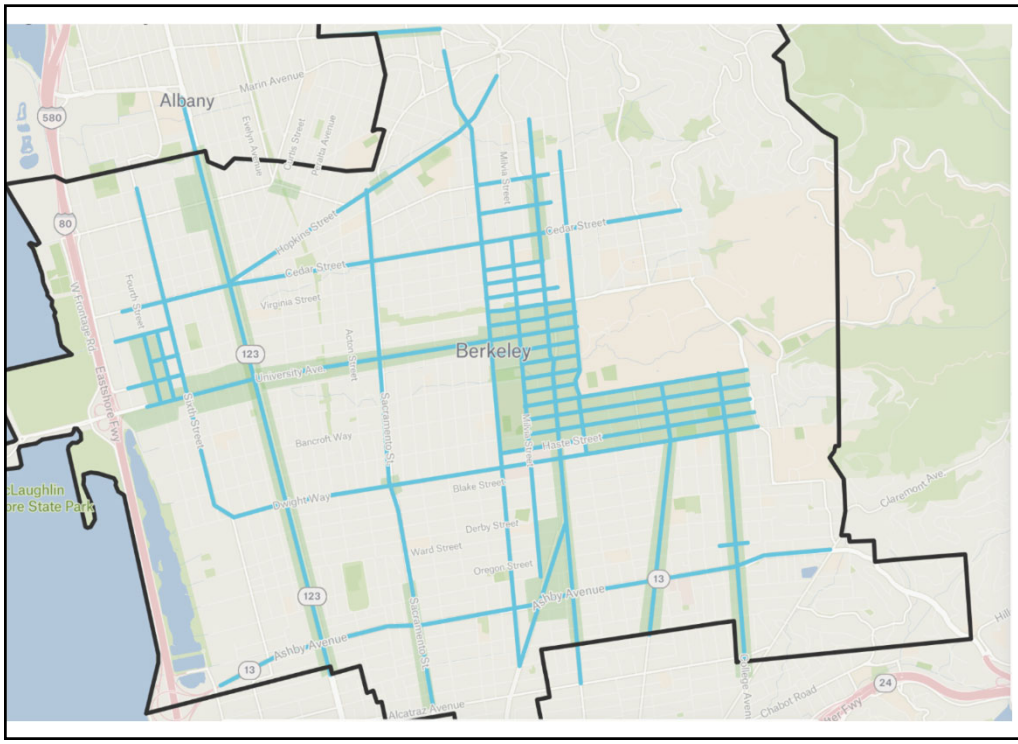

Commercial zones are shown in green

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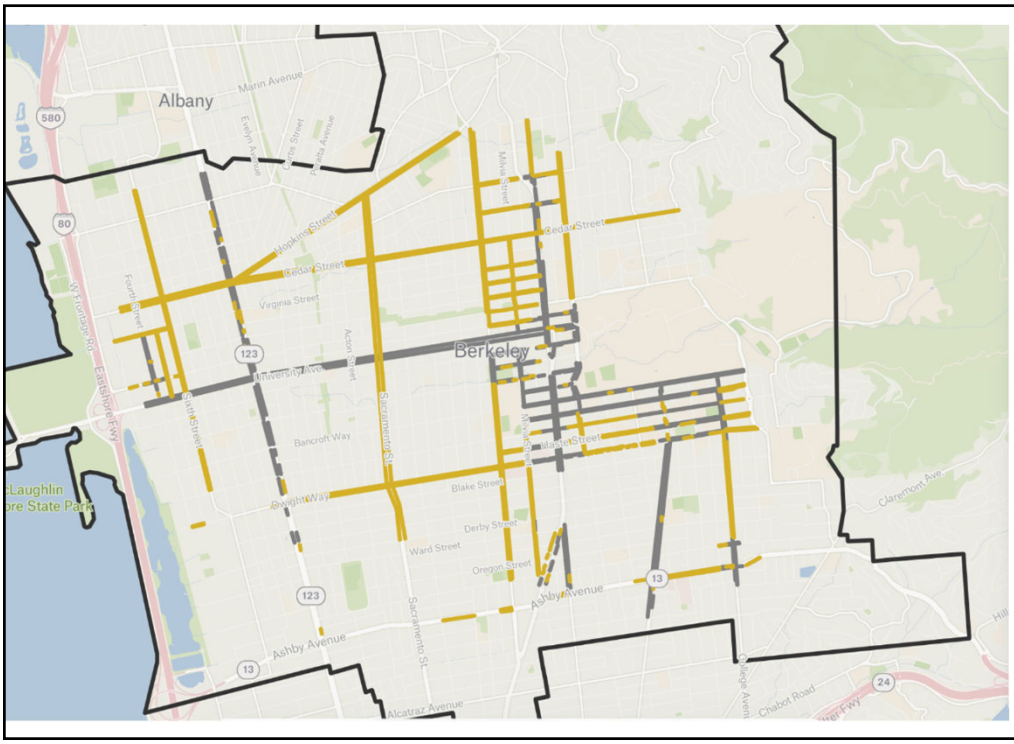
General maps



Yellow (lighter) = free
Gray (darker) = metered

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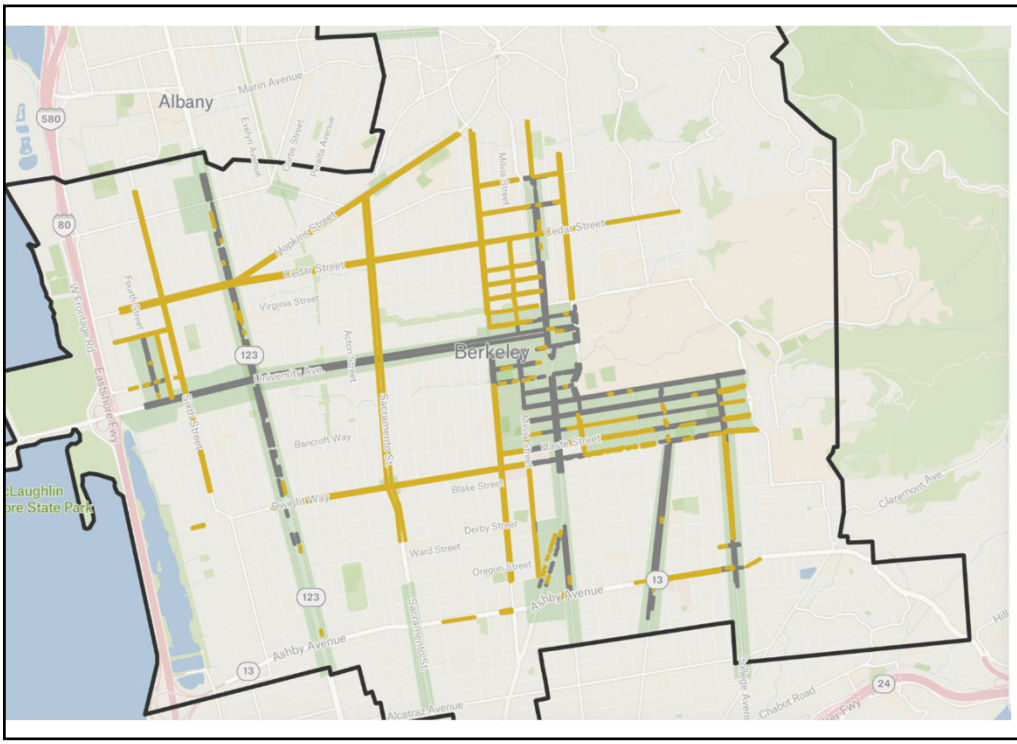
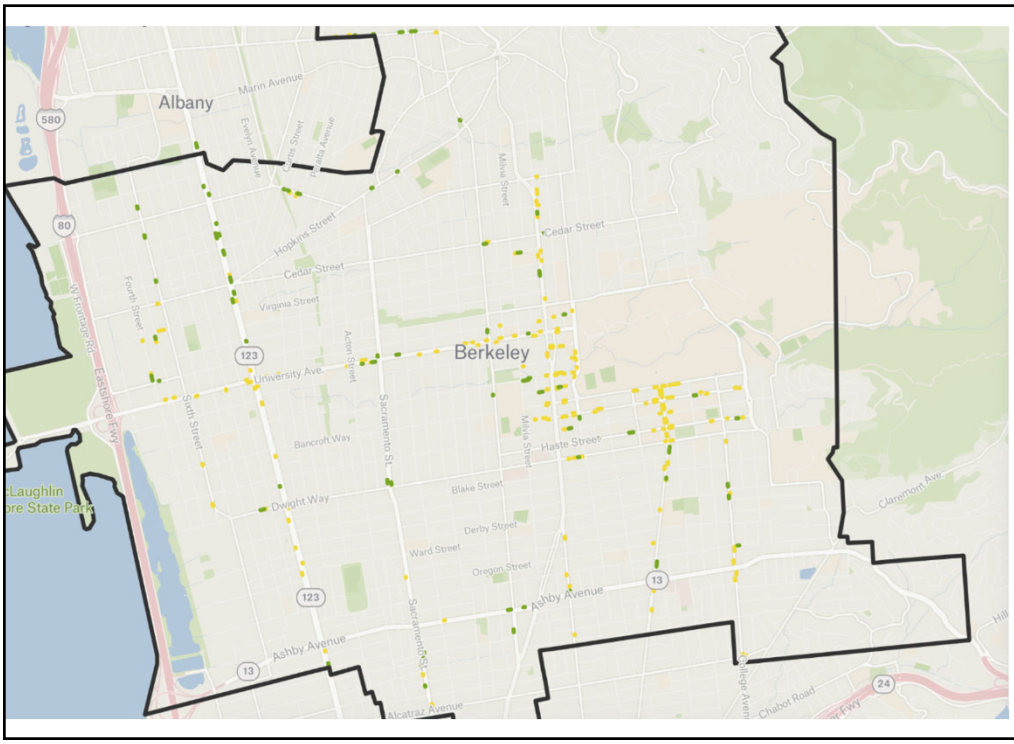


Areas of interest (in green) are mostly metered



330-360 loading zones (yellow) and 220-240 short term spots (green) on streets of interest

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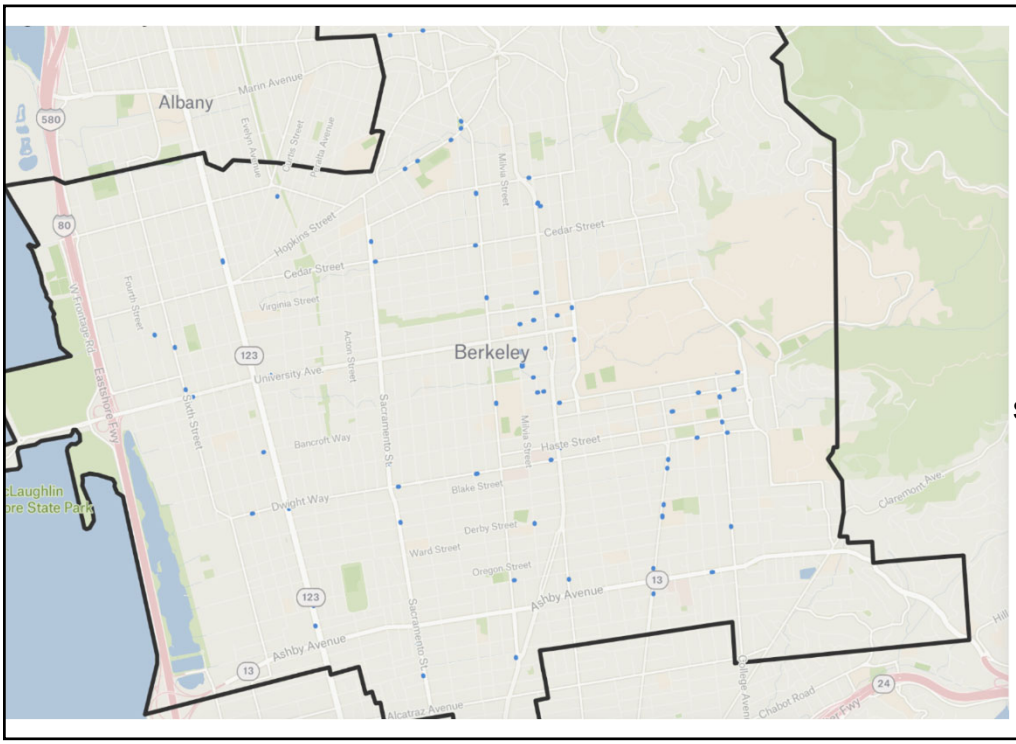
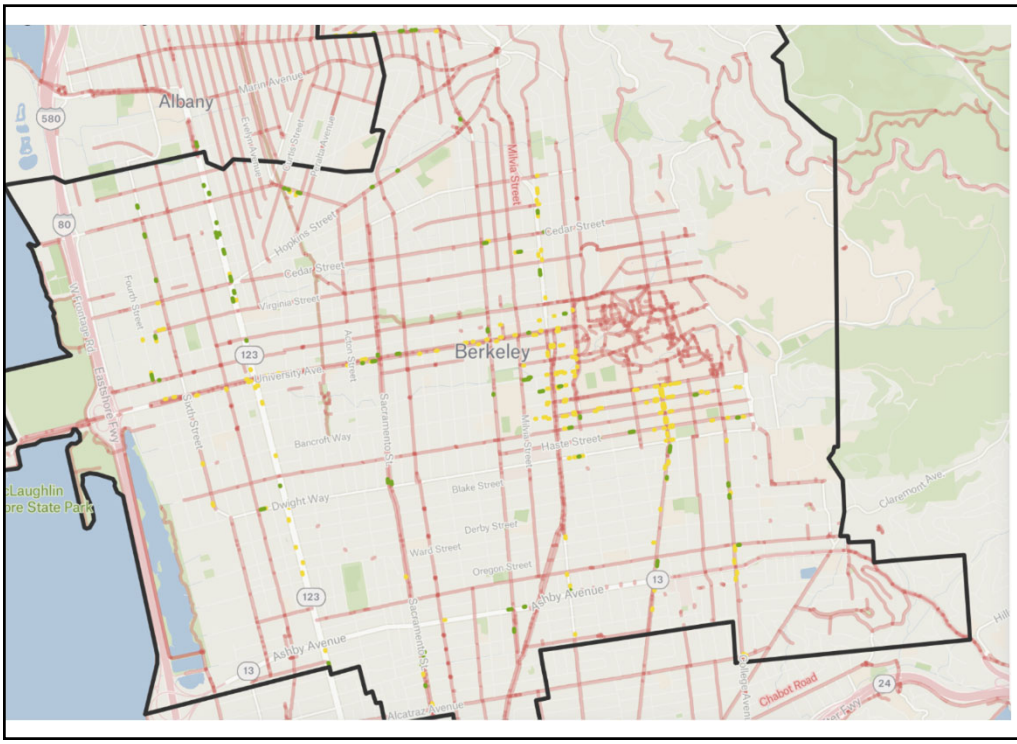


~82 disabled parking spots on streets of interest



Most loading zones are on a type of bike lane (59%)

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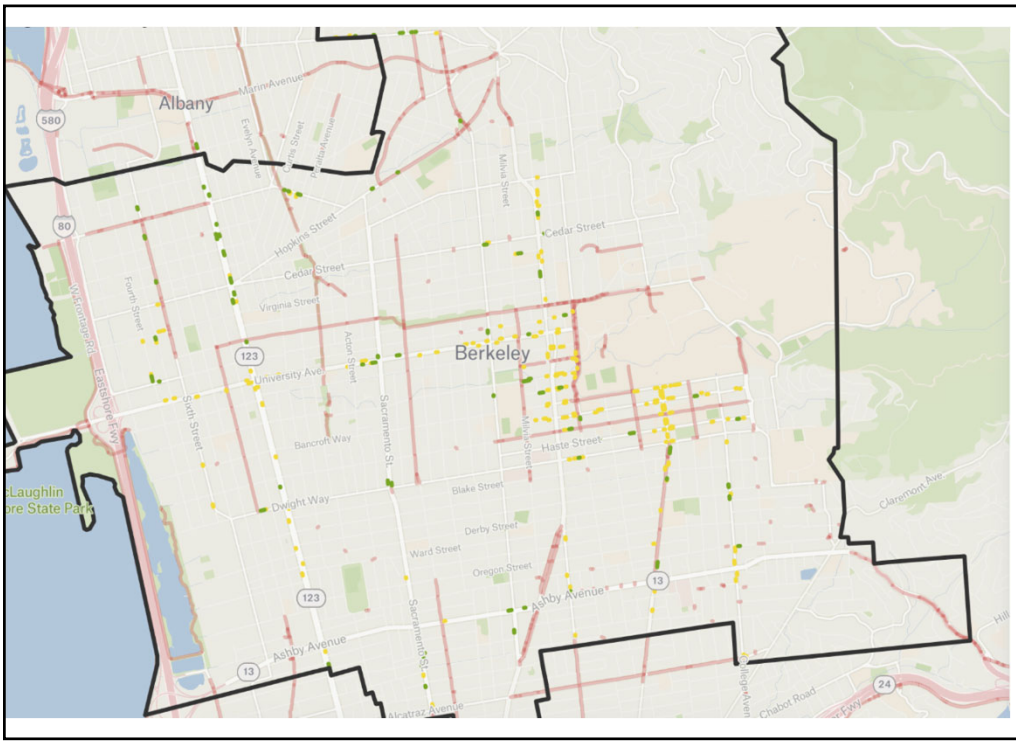
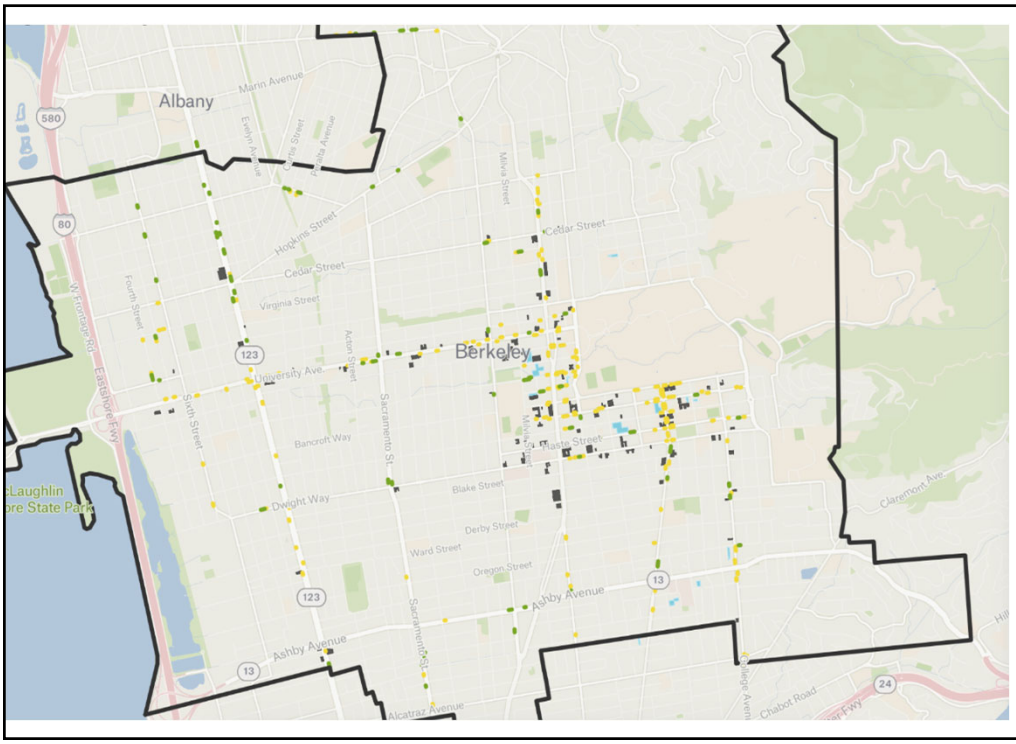


Only 10% of spots (36 loading zones and 22 short term parking spots) are on dedicated or protected bike lanes



Blue (light) squares = parking

Dark squares = apartment buildings

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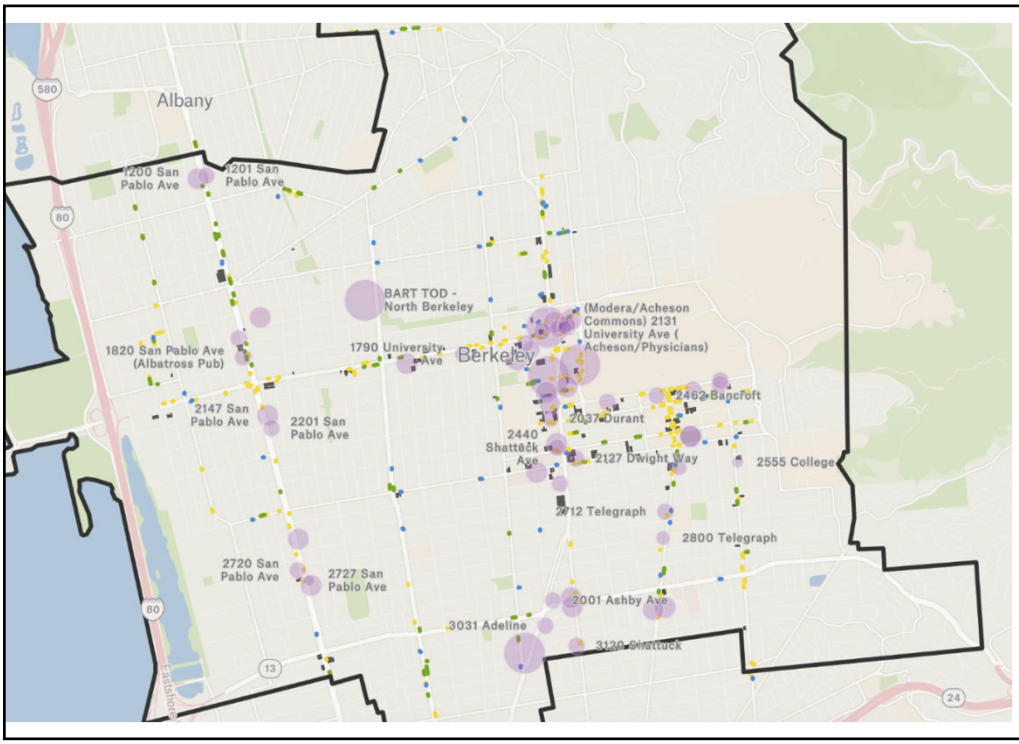

Planned housing: purple (circles)

Housing mini-analysis

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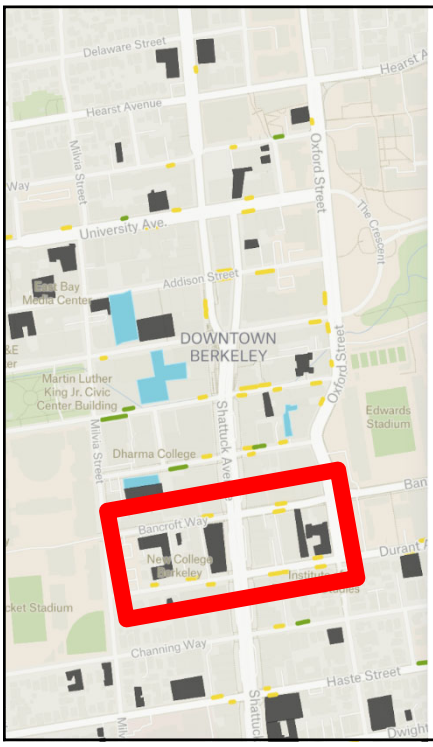
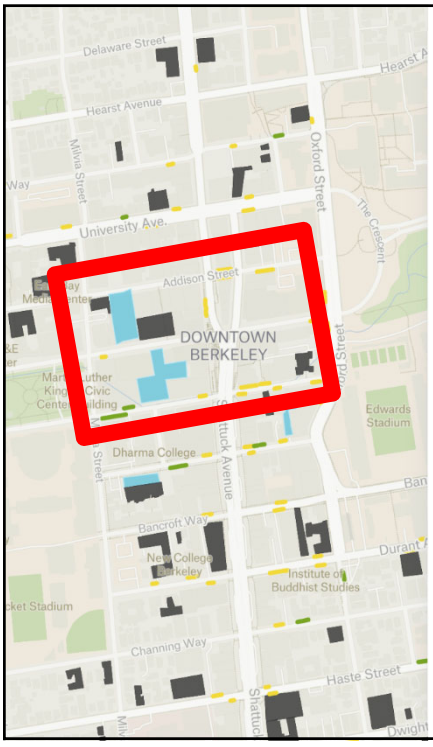
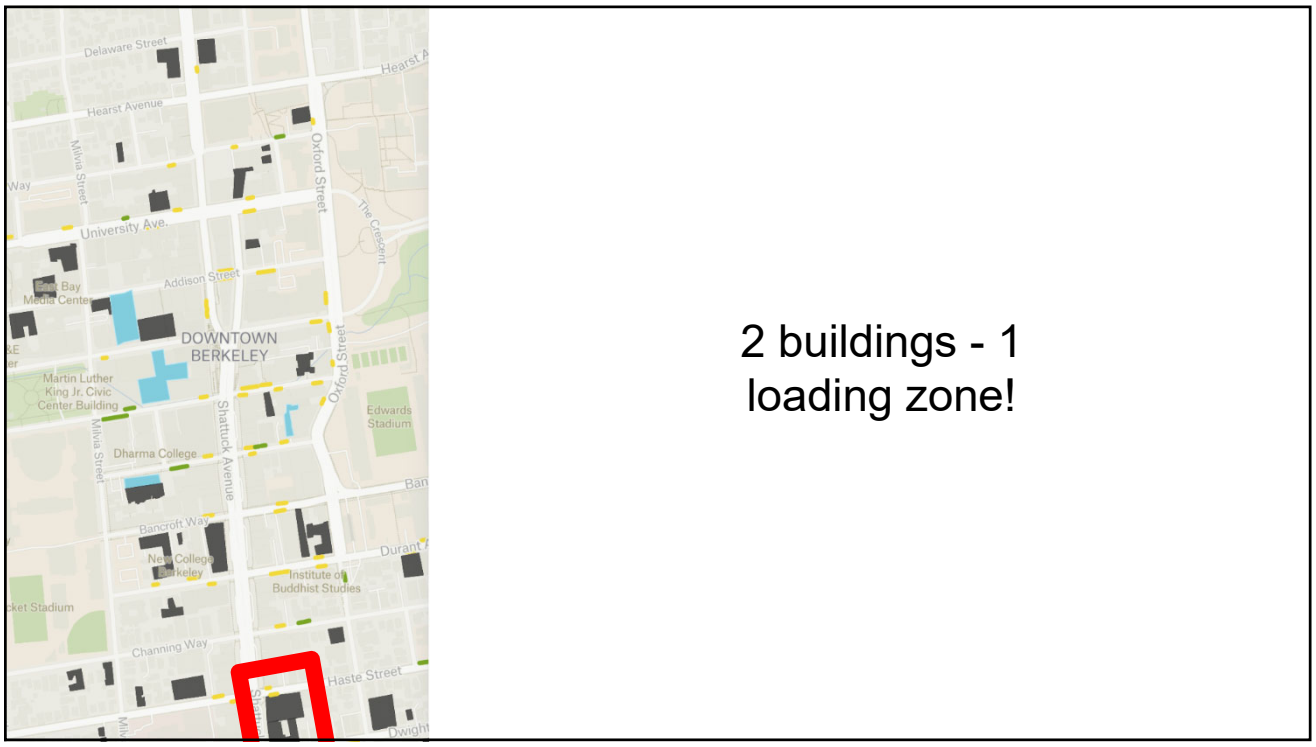


Only 2 loading spots among these five apartment buildings



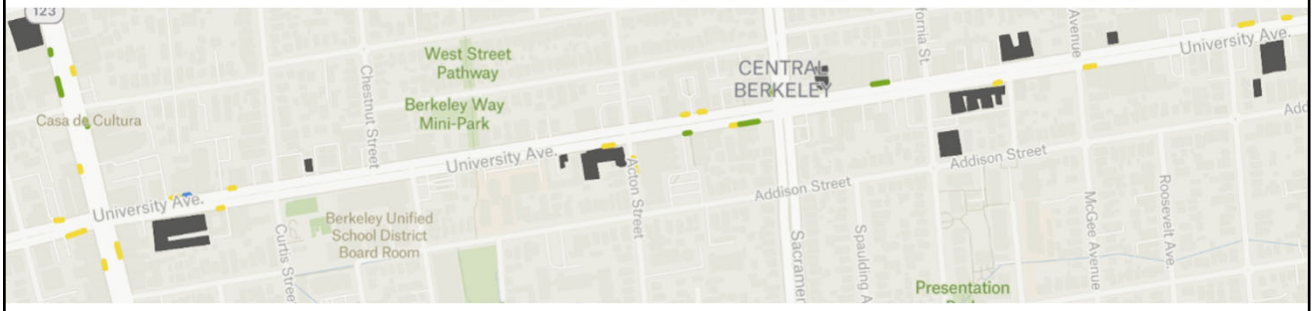
Great candidate area for loading zones - parking lots are very nearby!

https://docs.google.com/presentation/d/1xVruoBWcIIIB-fLBYYD7hXJ0sDi6QJO3YNYcla1Zsh0/edit?pli=1#slide=id.p

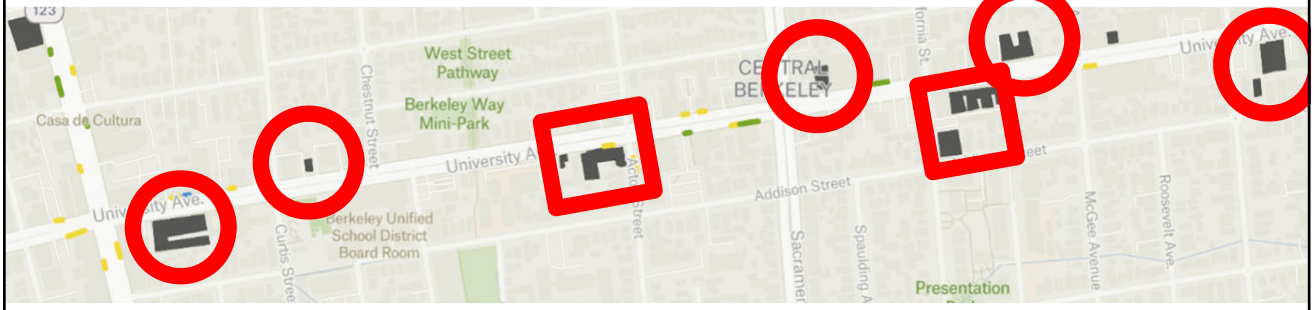


https://docs.google.com/presentation/d/1xVruoBWcIIIB-fLBYYD7hXJ0sDi6QJO3YNYcla1Zsh0/edit?pli=1#slide=id.p

University is entirely metered parking, medium restaurant density, medium-low housing density, but low loading density



Buildings with squares have loading zones, buildings with circles do not

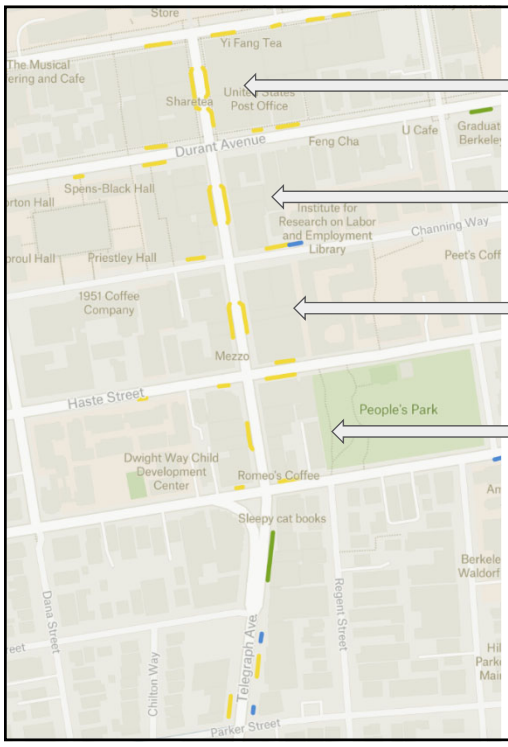


https://docs.google.com/presentation/d/1xVruoBWcIIIB-fLBYYD7hXJ0sDi6QJO3YNYcla1Zsh0/edit?pli=1#slide=id.p

1 loading zone
among these 6
apartment buildings
on San Pablo

Telegraph restaurant analysis

https://docs.google.com/presentation/d/1xVruoBWcIIIB-fLBYYD7hXJ0sDi6QJO3YNYcla1Zsh0/edit?pli=1#slide=id.p



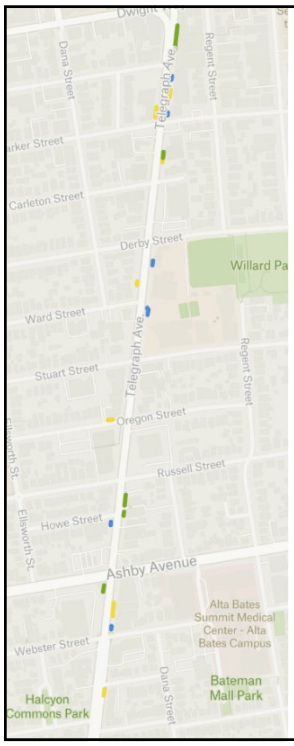
11 restaurants on these blocks, 5 served by loading zones; 7 other storefronts

9 restaurants on these blocks, 3 served by loading zones; 10 other storefronts

6 restaurants on these blocks, 2 served by loading zones; 8 other storefronts

9 restaurants on these blocks, 2 served by loading zones; 6 other storefronts

North Telegraph has the highest density of loading zones in the city, but even so, the majority of restaurants on each block do not have direct access to one at their curb



South Telegraph is less well served by loading zones - there are 9 restaurants total on this stretch, only 2 with loading zones. The rest of the loading zones serve urgent cares, dry cleaners, thrift stores, or schools

https://docs.google.com/presentation/d/1xVruoBWcIIIB-fLBYYD7hXJ0sDi6QJO3YNYcla1Zsh0/edit?pli=1#slide=id.p

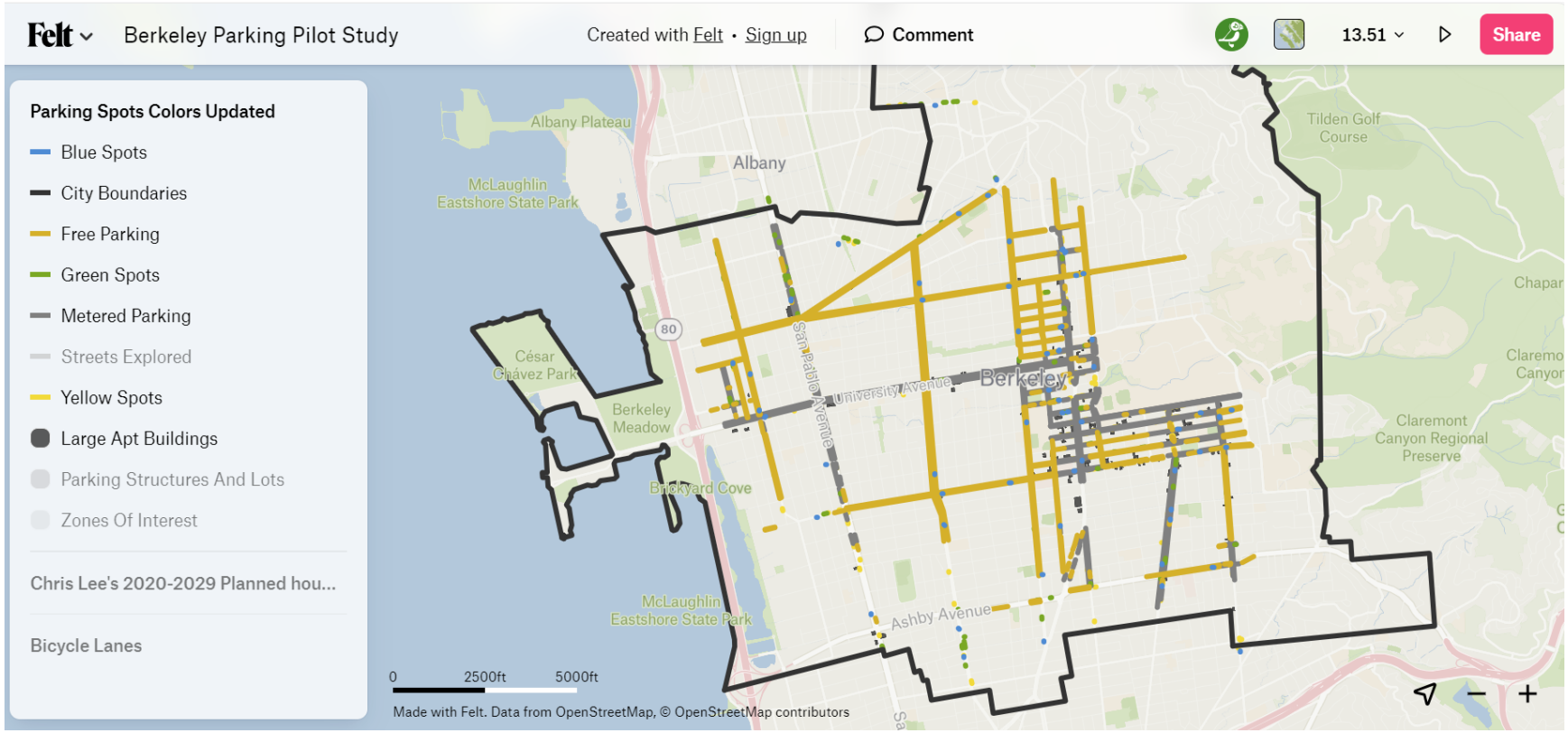
Conclusions and next steps

- While we may have somewhat comparable levels of loading zones to other cities, we (and they) could probably use more
- Apartments and restaurants are mostly poorly served by loading zone locations

- Determine highest priority intervention space
  - Compare Telegraph to other restaurant corridors
  - Evaluate loading zone density more completely on blocks with planned housing
- Study “completeness” of loading zone transition and best practices
- When to refer to Council to refer to Transportation and Infrastructure?

What other work is needed at this time?

ATTACHMENT 2



Available at:
https://felt.com/map/Berkeley-Parking-Pilot-Study-Asymc9AjmTk6TemDtxxhWZB?loc=37.866123,-122.264268,16.22z&share=1

Internal

06

On November 28, 2023, the City Council referred the green infrastructure needs and the issues and criteria for the segments on the Holdover List to the Facilities Infrastructure Transportation Environment and Sustainability Committee for review and discussion.

Councilmember Sophie Hahn
City of Berkeley, District 5

SUPPLEMENTAL AGENDA MATERIAL for Supplemental Packet 2

Meeting Date: **November 28, 2023**

Item Number: **17**

Item Description: **Street Rehabilitation Five Year Plan for Fiscal Years 2024-2028**

Submitted by: **Councilmembers Sophie Hahn and Susan Wengraf**

Recommended actions with respect to rehabilitation/paving of Hopkins Street.

Councilmember Sophie Hahn
City of Berkeley, District 5

ACTION CALENDAR
November 28, 2023

TO: Honorable Mayor and Members of the City Council

FROM: Councilmembers Sophie Hahn and Susan Wengraf

SUBJECT: Supplemental 2 Regarding Recommendations for Street Rehabilitation Five Year Plan for Fiscal Years 2024-2028 – Hopkins Street

RECOMMENDATION

This supplemental recommends taking segments of Hopkins Street from The Alameda to Gilman Street off of the holdover list and placing them on the current 2024-2028 Five Year Street Rehabilitation Plan, for paving in FY 2025, using only the previously allocated and currently available T1 funds associated with Hopkins Street for paving of this segment. The remaining holdover segments of Hopkins Street, from Gilman to San Pablo and from The Alameda to Sutter Street would remain on the holdover list and either be paved in FY 2025 along with other Hopkins segments or be programed for paving in the context of the subsequent five-year Street Rehabilitation plan, to be adopted in 2025, covering fiscal years 2026 - 2030.

BACKGROUND

All segments of Hopkins Street from San Pablo Avenue (to the West), to Sutter (to the East) have been scheduled for paving in some or all Council-approved paving plans for 2016-2020, 2020-2024, 2021-2025, and 2023-2027. The attached chart documents the progression of each segment of Hopkins through these paving plans and the Pavement Condition Index (PCI), and recommended treatment for each segment. Costs for each treatment were not reported for every year and every segment; where costs were provided they are shown. Public Works staff has informed us that the PCI and treatment shown for San Pablo to Stannage for the 2024-2028 recommended treatment is incorrect as the pavement quality is higher than indicated and treatments will be less significant/costly than expected. Unusually high costs associated with the Sutter to Alameda segment also warrant re-evaluation.

The current Staff report suggests a project budget of approximately $8 million to complete all paving on Hopkins Street. This figure includes costs for more expensive

treatments assigned to the San Pablo to Stannage segment, based on an incorrect PCI rating that staff will be re-evaluating, as well as an extremely high cost ($6.4 Million) currently shown for the segment from The Alameda to Sutter streets – a segment that just one year prior was estimated to cost only $876,500. Costs associated with each of these segments will benefit from further clarification and likely will be revised down. Neither of these segments is proposed to be taken off the holdover list at this time.

According to the Staff report, of the approximately $11.5 million originally assembled for Hopkins, $6.75 million were T1 paving funds. From this information, it can be inferred that $4.75 million was available from other sources. *In a meeting with the City Manager and Public Works Staff this past Wednesday, November 22, Staff clarified that $3.9 million of T1 funds remain allocated for Hopkins paving (approximately $2.8 million of the original $6.75 million in Hopkins Street T1 funds were re-allocated to fill gaps in other T1 projects during the June budget process) and are sufficient to cover paving Hopkins from The Alameda to Gilman Street. These funds are not subsumed into the larger Street Rehabilitation plan as presented and are currently available to pave this critically important segment.*

Given that $3.9 million in T1 funds remain fully available to pave Hopkins, and on the recommendation of Public Works Staff that segments of Hopkins from The Alameda to Gilman are in most critical need of repaving, *this supplemental recommends that Hopkins Street from The Alameda to Gilman Streets be added to the current Five Year Rehabilitation Plan – with funds for paving coming exclusively from the previously approved T1 allocation*. The reasons for selecting FY 2025 rather than FY 2024 are discussed below.

All of the remaining funds currently allocated to repave Hopkins Street - calculated to be approximately $4.75 million - are slated to be reallocated to paving other streets in the current Five Year Rehabilitation plan, per the proposal in the Staff report.

Selection of the segment from The Alameda to Gilman Steets to be paved using currently existing and previously allocated T1 funds reflects Staff's recommendation for use of these funds. This segment encompasses blocks with the lowest PCI ratings and also corresponds with all areas traversed by AC Transit busses. This segment also encompasses the shopping district and King pool and playing fields - areas that are heavily used by community members throughout Berkeley.

Placement of the segment of Hopkins from The Alameda to Gilman Streets on the current Five Year Rehabilitation Plan is requested for FY 2025 (rather than FY 2024) to allow Staff to document and confirm sources of funds for the upgraded street light at

Sacramento Street, possible placemaking and landscaping elements, and potential funds to pave additional segments simultaneously. It also provides time needed to design required stormwater management features (see below). The San Pablo to Stannage and Alameda to Sutter segments that will remain on the holdover list can be re-evaluated as well, to ensure PCI ratings and recommended treatments and estimated costs remain appropriate. It is anticipated that costs for rehabilitation of both segments will be found to be lower than current projections.

The Staff report clarifies the need for green infrastructure for the entirety of the Sutter to Gilman segment (see page 3) with an estimated cost of $500,000 - $775,000. $1.125 million of Stormwater Funds are allocated to FY2025 and can easily cover green infrastructure needs for the shorter segment of The Alameda to Gilman. No Stormwater Funds are programmed to be allocated for FY 2024 in the Staff report. The availability of Stormwater Management Funds in FY2025 solves the problem of needing funds to cover necessary stormwater improvements for the segment of Hopkins for which T1 Funds are already allocated and available, and is another reason for the selection of FY2025 as the appropriate year for rehabilitation of the Alameda to Gilman segment.

The Staff Report also states (see page 11) that paving will continue to "include integrated features, such as…curb ramps, high visibility crosswalks, pervious concrete, speed humps, diverters, pedestrian refugees, [and] traffic circles." Integrating all of these into a cohesive paving program for Hopkins from The Alameda to Gilman streets will require a longer planning timeline than is possible for paving in FY2024.

Concerning the segments of Sutter to The Alameda and Gilman to San Pablo that are recommend to remain on the holdover list, it is hoped that the forensic research into previously allocated funds and potential funding reserves/overages (as mentioned in the Staff report), combined with expected lower costs after re-evaluation of PCI and appropriate treatments, will allow these segments to either be paved simultaneously in FY 2025 – which would offer economies of scale by grouping all Hopkins segments into a single paving year – or will be programed for future paving in the 2026 -2030 paving plan that will be adopted in FY 2025.

It must be emphasized that funding to pave all these Hopkins segments has been previously allocated. Adoption of the currently recommended Street Rehabilitation Plan as presented in the Staff Report reallocates all the non-T1 funds previously allocated to Hopkins paving into other projects. This supplemental does not change the reallocation of non-T1 dollars to other streets; it simply places the segments for which paving can be funded through already-allocated T1 monies onto the plan in FY2025, ensuring paving of the segment during the FY2025 paving season.

Over several years, Staff has stated that paving and re-stripping of Hopkins does not preclude future installation of a larger project. Our office has also received confirmation that the 5-year moratorium on post-paving projects does not apply to City of Berkeley projects. While the potential broader Hopkins project is delayed under the City Manager's action, *paving of the most critical segment of Hopkins Street, using previously-allocated and currently available T1 funds, should not be further delayed. With known cost escalations for paving treatments, every year T1 funds are not deployed for the purpose for which they have already been allocated risks reducing the positive impact of those dollars.*

Our office has received a large volume of requests from cyclists, pedestrians, residents, businesses, neighbors, customers, and visitors to repave crumbling, potholed, and dangerous segments of the Hopkins corridor - all of which have been previously approved and funded for rehabilitation. *Paving in and of itself is a significant safety upgrade for all users*, especially when coupled with high visibility crosswalks, speed humps, curb ramps, pedestrian refuges, new traffic signals, and stop signs.

We urge moving Hopkins Street from The Alameda to Gilman Streets from the holdover list to the FY 2025 paving program to be paved using already-allocated T1 funds, and maintenance of other all other segments on the holdover list - with the hope that funds will be identified for the rehabilitation of these additional segments in FY 2025 or in the early years of the 2026 - 2030 paving plan.

Sutter to Alameda			
Year	**PCI**	**Treatment**	**Cost**
2016-2020	Not on Paving Plan		
2018-2022	Not on Paving Plan		
2020-2024	Not on Paving Plan		
2021-2025	Not on Paving Plan		
2023-2027	30	Heavy Rehab	$876,500
2024-2028	26	Reconstruct	$6.4M

Alameda to Josephine			
Year	**PCI**	**Treatment**	**Cost**
2016-2020	47	Overlay	
2018-2022	Not on Paving Plan		
2020-2024	Not on Paving Plan		
2021-2025	Not on Paving Plan		
2023-2027	49	Heavy Rehab	$216,700
2024-2028	40	Reconstruct	

Josephine to Beverley Place			
Year	**PCI**	**Treatment**	**Cost**
2016-2020	58	Overlay	
2018-2022	Not on Paving Plan		
2020-2024	60	Heavy Rehab	
2021-2025	50	Heavy Rehab	
2023-2027	50	Heavy Rehab	$874,580
2024-2028	40	Reconstruct	

Beverly Place to Carlotta			
Year	**PCI**	**Treatment**	**Cost**
2016-2020	58	Overlay	
2018-2022	Not on Paving Plan		
2020-2024	60	Heavy Rehab	
2021-2025	50	Heavy Rehab	
2023-2027	50	Heavy Rehab	$874,580
2024-2028	40	Reconstruct	

Carlotta to McGee			
Year	**PCI**	**Treatment**	**Cost**
2016-2020	41	Overlay	
2018-2022	Not on plan		
2020-2024	47	Heavy Rehab	
2021-2025	45	Heavy Rehab	
2023-2027	47	Heavy Rehab	$149,680
2024-2028	42	Reconstruct	

McGee to Monterey			
Year	**PCI**	**Treatment**	**Cost**
2016-2020	55		
2018-2022	Not on plan		
2020-2024	Not on plan		
2021-2025	Not on plan		
2023-2027	47	Heavy Rehab	$119,167
2024-2028	42	Reconstruct	

Monterey to Hopkins Court			
Year	**PCI**	**Treatment**	**Cost**
2016-2020	Not on Paving Plan		
2018-2022	Not on Paving Plan		
2020-2024	71	Heavy Rehab	
2021-2025	47	Heavy Rehab	
2023-2027	47	Heavy Rehab	
2024-2028	41	Reconstruct	

Sacramento to Gilman			
Year	**PCI**	**Treatment**	**Cost**
2016-2020	19	Reconstruct	
2018-2022	Not on Paving Plan		
2020-2024	0	Heavy Rehab	
2021-2025	32	Heavy Rehab	
2023-2027	32	Heavy Rehab	
2024-2028	23	Reconstruct	

Gilman to Peralta			
Year	**PCI**	**Treatment**	**Cost**
2016-2020	79	Surface Seal	
2018-2022	N/A	N/A	
2020-2024	64	Heavy Maintenance	
2021-2025	58	Heavy Maintenance	
2023-2027	58	Heavy Maintenance	$493,031
2024-2028	47	Heavy Rehab	

Peralta to Northside			
Year	**PCI**	**Treatment**	**Cost**
2016-2020	83	Surface Seal	
2018-2022	N/A	N/A	
2020-2024	78	Light Maintenance	
2021-2025	78	Light Maintenance	
2023-2027	78	Light Maintenance	$239,587
2024-2028	70	Heavy Rehab	

Northside to Stannage			
Year	**PCI**	**Treatment**	**Cost**
2016-2020	79	Surface Seal	
2018-2022	N/A	N/A	
2020-2024	80	Heavy Maintenance	
2021-2025	69	Heavy Maintenance	
2023-2027	69	Heavy Maintenance	$181,658
2024-2028	63	Heavy Rehab	

Stannage to San Pablo			
Year	**PCI**	**Treatment**	**Cost**
2016-2020	76	Surface Seal	
2018-2022	N/A	N/A	
2020-2024	73	Light Maintenance	
2021-2025	74	Light Maintenance	
2023-2027	74	Light Maintenance	$37,188
2024-2028	52	Reconstruct	

Office of the City Manager

REVISED
AGENDA MATERIAL
for Supplemental Packet #2

Meeting Date: **November 28, 2023**

Item Number: **17**

Item Description: **Street Rehabilitation Five Year Plan for Fiscal Years 2024-2028**

Submitted by: **LaTanya Bellow, Interim Director, Public Works**

The purpose of this supplemental update is to provide an update to Table 1 “Five Year Paving Program Funding Source Allocations by Year” included in the Fiscal Impacts of Recommendation section of the report. The revised table is needed to correct the beginning year of CPI growth assumption for the “CIP Fund/Council Policy on Adequate Street Maintenance” funding line and update the annual funding and total funding amounts resulting from this update.

The “CIP Fund/Council Policy on Adequate Street Maintenance” Fund Source was established by Council Resolution 70,456-N.S. on July 26, 2022, establishing a commitment to increase the General Fund contribution to streets paving by $8,000,000 annually, to be adjusted annually for inflation using the greater of cost of living in the SF Bay Area or statewide CPI. While the amounts appropriated in FY 2023 ($5,100,000) and FY 2024 ($9,000,000) under this policy combine to be less than the desired $8,000,000 plus inflation, they were made based on available funding in the FY 2023 – 2024 biannual budget cycle. For the purposes of planning over the life of the five-year paving plan, staff does assume that the full amount of the new funding source is available, beginning with the FY 2025 year building off of two years of assumed CPI increases from the intended $8,000,000 allocation in FY 2023.

The previous version of this table applied the CPI calculation prematurely to FY 2023. The updated Table 1 in this supplemental packet shifts the first year of applied CPI adjustments to FY 2024. Staff has applied a 5.3% CPI increase for FY 2024, based on the February 2022 – February 2023 SF Bay Area CPI, with all future years assuming a 3% CPI increase. All funding from FY 2025 and beyond is subject to appropriation by City Council.

Table 1: Five Year Paving Program Funding Source Allocations by Year					
Fund Description	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
State Transportation Tax	495,303	495,303	495,303	495,303	495,303
Road Repair and Accountability Act of 2017	1,700,000	1,700,000	1,700,000	1,700,000	1,700,000
Measure BB – Local Streets & Roads	2,980,000	2,980,000	2,980,000	2,980,000	2,980,000
Measure F Vehicle - Registration Fee	155,000	155,000	155,000	155,000	155,000
Capital Improvement (CIP) Fund	2,127,562	1,925,000	1,925,000	1,925,000	1,925,000
CIP Fund/ Council Policy on Adequate Street Maintenance	5,996,598	8,676,720	8,937,022	9,205,132	9,481,286
Zero Waste Fund	1,000,000	1,000,000	1,000,000	2,000,000	2,000,000
Storm Water Fund	0	1,125,000	0	1,500,000	1,500,000
TOTAL	14,454,463	18,057,023	17,192,325	19,960,435	20,236,589

Office of the City Manager

ACTION CALENDAR
November 28, 2023

To: Honorable Mayor and Members of the City Council

From: Dee Williams-Ridley, City Manager

Submitted by: LaTanya Bellow, Interim Director, Public Works

Subject: Street Rehabilitation Five Year Plan for Fiscal Years 2024-2028

RECOMMENDATION
Adopt a Resolution adopting the Five Year Street Rehabilitation Plan for Fiscal Years 2024-2028.

SUMMARY
The Street Rehabilitation and Maintenance Policy requires a *Five Year Street Rehabilitation Plan* (*Five Year Plan*) be adopted by City Council on a biennial basis. The existing plan is nearly complete as City Council's additional paving funding enabled more streets to be paved more quickly than planned, and some streets from the existing plan are being held over for various reasons. Staff are proposing the City Council adopt a new *Five Year Plan* so that Public Works can stay on track to pave next summer.

FISCAL IMPACTS OF RECOMMENDATION
The available funds for the *Five Year Plan* are derived from estimated available funding from the following: State Transportation (Gas) Taxes, Alameda County Transportation Sales Tax Measure BB, County Vehicle Registration Fee Measure F, Zero Waste, Storm Water, and the City of Berkeley's General Fund. These funding sources and their estimated annual amounts are listed in Table 1 below.

The proposed *Five Year Plan* includes three important new revenue sources. First, on July 26, 2022, Council adopted the policy, *Adequate General Fund Contribution for Street Maintenance to Prevent Deterioration of Pavement Condition,* which committed an additional $8 million annually in General Funds for paving in perpetuity and adjusted the amount annually for inflation. The purpose of this policy was to prevent further deterioration of the City's streets. This new source and its annual amount ($8M plus annual escalator) are listed in the table below as "CIP Fund/ Council Policy on Adequate Street Mtce."

Second, Council included $1-$2 million annually in rate revenue from the Zero Waste Fund to offset the impact of Zero Waste collection vehicles on the City's pavement. This revenue will transfer out of the Zero Waste Fund annually and into the City's annual paving project.

Table 1: Five Year Paving Program Funding Source Allocations by Year					
Fund Description	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
State Transportation Tax	495,303	495,303	495,303	495,303	495,303
Road Repair and Accountability Act of 2017	1,700,000	1,700,000	1,700,000	1,700,000	1,700,000
Measure BB – Local Streets & Roads	2,980,000	2,980,000	2,980,000	2,980,000	2,980,000
Measure F Vehicle - Registration Fee	155,000	155,000	155,000	155,000	155,000
Capital Improvement (CIP) Fund	2,127,562	1,925,000	1,925,000	1,925,000	1,925,000
CIP Fund/ Council Policy on Adequate Street Mtce	5,996,598	8,937,022	9,205,132	9,481,286	9,765,725
Zero Waste Fund	1,000,000	1,000,000	1,000,000	2,000,000	2,000,000
Storm Water Fund	0	1,125,000	0	1,500,000	1,500,000
TOTAL	14,454,463	18,317,325	17,460,435	19,236,589	20,521,028

Third, the funding sources include the “Storm Water Fund” given the new Municipal Regional Permit (MRP) will require additional green infrastructure as described below.

CURRENT SITUATION AND ITS EFFECTS

The Council adopted a *Street Rehabilitation and Maintenance Policy* (Street Maintenance Policy), Resolution No. 70,204-N.S., on January 25, 2022. The policy requires a *Five Year Plan* be adopted by Council biennially in line with the City’s budgeting process, and that it do so after the advice of the Transportation and Infrastructure Commission (TIC). When Council adopted the Policy, it also adopted the first three years of a *Five Year Plan, Equity Alternative (*FY 22-25 Plan*).*

It is important that a new *Five Year Plan* be approved soon. With approval, Public Works will be on track to design, bid, and award the construction contract to pave FY 2024 streets in the summer of 2024 despite the Engineering Division’s 20%+ vacancy rate. Given this vacancy rate’s effect on staff capacity, any delay in Council’s approval of this plan might risk either the FY 2024 annual paving project not proceeding or the project’s substantial delay. Approval of the proposed *Five Year Plan* also ensures proper coordination with utilities and related projects, and delivers on the commitment to longer planning horizons made in the *Street Maintenance Policy* and *Vision 2050 Framework*. If future changes are needed in the adopted *Five Year Plan*, those changes would be made in September – December 2025 as the next *Five Year Plan* is being developed and adopted.

FY 2022-2025 Plan and Held Over Segments

On January 25, 2022, Council adopted the *Five Year Plan, Equity Alternative*. On June 28, 2022, Council adopted a budget that increased baseline paving funding from the General Fund by $5.1M in FY 2023 and $9.0M in FY 2024. These were historic and unprecedented investments in paving from the General Fund. Given the additional General Funds and staff's ability to advance street segments from FY 2024 and FY 2025 to earlier years, Public Works will have paved all the segments of the current plan by the end of this current paving project albeit with some important exceptions. Several segments of the existing plan are being held over. Some segments had to be held over due to utility conflicts with EBMUD. The segment on Telegraph between Dwight and Bancroft was split into a different project and is awaiting funding for the design phase so is not ready to enter construction. In addition, the Hopkins project is on hold per the City Manager's April 5, 2023 off agenda memo. These held over segments are listed at page 1 of Attachment 1, Proposed *Five Year Plan,* and staff are committed to ensuring these held over segments are completed as soon as possible and ideally no later than this five year period.

Each of the holdover segments are in different budget situations. The segments due to utility conflicts either have sufficient funding or can be funded out of the proposed utility coordination line discussed below. Staff are attempting to complete the segment on Woodmont from Rosemont to Woodmont Court in the current paving contract. If existing funds are not found for the Vistamont segments, these segments would be completed in the next summer or two using the utility coordination funds in the proposed *Five Year Plan*. The Telegraph Avenue segment between Dwight and Bancroft has no design or construction funding. This segment has been the subject of an unsuccessful 2022 federal earmark request for design funding. The Hopkins Project's budget has changed significantly in the last few months. On June 13, Council removed $2,800,000 in budget from the Hopkins project in order to close the Measure T1 funding gap, and removed another $900,000 from the project's budget in its adoption of the FY 2024 budget. Given these reductions, staff are aiming to find available funds in the amount of $2-2.5M to increase the current Hopkins project's budget to ~$8 million, which would be roughly equal to the amount of funds to complete this project's paving elements. However, the segment of Hopkins between Gilman and Sutter would trigger green infrastructure requirements and would require an additional $500,000-$775,000.

Table 2: **Centerline Miles Paved**	
Fiscal Year	*Centerline Miles Paved*
2019 (includes 2018)	5.3 (avg 2.15 annually)
2020	2.6
2021	1.9
2022	2.6
2023 (includes Southside)	7

This table shows a dramatic increase in centerline miles paved in FY 2023, nearly 2-3 times the annual rate for the preceding four years. The increase in FY 2023 miles paved explains why the FY 2022-2025 plan is nearly complete early, all of which was enabled by Council's increase to baseline paving funding.

Developing the proposed *Five Year Plan* (FY 2024-2028)
The proposed plan was developed in the following way. Staff began with years 4 and 5 of the existing *Five Year Plan*. Staff then looked at the arterial alternative that was part of the discussion in the last approved plan, and incorporated the segments from that arterial alternative in this proposed plan. Then staff fed funding assumptions into the City's Streetsaver program. This program, based on the street's condition, its point in its lifecycle, and the costs and effects of various treatments, strives to maximize the impact of every paving dollar invested so the dollar is stretched for the biggest impact. After Streetsaver's proposed list of streets, staff run that list against utility conflicts, including sewer, water, electrical, telecom, or undergrounding. Then staff adjust the list in order to meet the various goals of the *Street Maintenance Policy.*

Proposed *Five Year Plan* (FY 2024-2028): Utility Coordination, Green Infrastructure, Daylighting
This plan incorporates new features that significantly advance the City's efforts in utility coordination, green infrastructure deployment, and intersection daylighting.

First, the proposed plan includes funding reserves for use in coordinating with utility work, such as that performed by EBMUD and PG&E ("Utility Coordination" on the proposed Plan). These funds would be used to address the pavement in areas, not necessarily in the Plan, where the utilities are constructing large underground utility projects. In this way the utilities would be contributing funds that would have been used to pave their utility trench and the City would contribute funds to pave the remainder of the street width. Typically, the utilities are resurfacing a 4 feet wide strip above their utility trench (per City standard trench resurfacing detail) leaving the rest of the street in its original condition.

If Council adopts the plan, staff would work with the utility companies, where appropriate, to maximize pavement funds through cooperation. Depending on the situation, this could be accomplished in the following three ways:

- Enter into reimbursement agreements with the utilities, on a case by case basis, whereby the City would perform the utilities' trench resurfacing while paving the full width of the pavement. In this case, the utility would reimburse the City.
- Enter into reimbursement agreements with the utilities, on a case by case basis, whereby the utility would perform the utilities' trench resurfacing while paving the full width of the pavement. In this case, the City would reimburse the utility.
- The City and the utility contract separately with the same contractor to pave the section of street for which each is responsible to construct. This would be similar to the way the City of Oakland cooperates with EBMUD.

This change advances the Street Maintenance Policy's focus on *Dig Once*, and it responds to a frequent complaint from residents that streets should be fully paved once utility work is complete. Future utility coordination may include the City recouping funds from the utilities to address the damage to paving caused by the utilities' trucks operation on City streets, as the City is currently doing with its own Zero Waste collection vehicles.

Second, the City's Municipal Regional Permit (MRP) requires as of July 1, 2023 that pavement reconstruction over one acre will require the installation of green infrastructure sufficient to treat that acreage. Staff estimate this cost to be approximately $750,000 per acre. This requirement is only triggered by "reconstructed" segments, i.e., where the paving project will touch the base of the roadway rather than merely resurface the roadway. Many cities, including Berkeley, are finding implementation of this rule challenging. Yet Public Works has identified the segments believed to be subject to this rule, as noted in the *Treatment* column of the plan as "Reconstruct." The plan further proposes that the Storm Water Fund contribute up to a cap of $1.5 million in any individual year toward the costs of such treatments with the remainder contributed from the paving funds. These costs are included as a line item "MRP Requirements" on the proposed Plan.

The MRP requirements are beneficial to the City's goal to add green infrastructure and detrimental to City's goal to reach good, safe streets, given already insufficient funds for paving now will be diverted into green infrastructure. Public Works is exploring whether signature green infrastructure projects that treat large areas may better meet the City's green infrastructure and paving goals, and reduce the tradeoffs given limited funding. For example, staff is working with the Regional Water Quality Control Board (RWQCB) to determine what large signature projects (and the methods employed within those projects) may enable the City to determine an area within which paving is occurring as already treated. Overall, the City has treated 29 acres in the right of way through green infrastructure and has a total of 41 green infrastructure installations.

Third, staff are not in this action seeking approval on a new daylighting intersection policy, but instead will return to Council in early 2024 with a draft daylighting intersection policy that implements daylighting as paving occurs. On February 28, 2023, Council unanimously adopted a referral to the City Manager to develop a comprehensive intersection daylighting policy. On April 25, 2023, Council prioritized this as their highest ranked new, unstarted referral. Given the priority and consistency with the City's existing plans, staff will seek the Transportation and Infrastructure Commission's input on the draft policy in November and return to Council for approval in early 2024. The draft policy will likely include that any street in the *5 Year Paving Plan* "shall be" daylighted within 20 feet of the intersection, meaning the addition of red curb and/or removal of parking, to improve all users' safety on the street. Staff had been considering focusing on arterials and collectors at first, but the new state law, AB 413, requires daylighting within 20 feet of any marked or unmarked crosswalk. Most intersections in Berkeley will be subject to this law.

Given the new state law's reach, daylighting and its associated red curbing in all paved segments will both improve safety for all users of these streets, and assist parkers in properly complying with the new state law and avoiding parking tickets.

The Proposed *Five Year Plan* and Its Compliance with the *Street Maintenance Policy*

A map of the *5 Year Plan* is included as Attachment 2. The map shows each street segment, color coded by year proposed for paving, and includes both Council district boundaries and Equity Zone boundaries.

The *5 Year Plan* complies with the *Street Maintenance Policy* in the following ways:

- Advances the Dig Once approach
- Advances the Green Infrastructure Plan
- Consistent with Vision 2050 in moving toward long-term planning and focusing on maintenance
- Incorporates new funding sources from impacts of heavy vehicles
- Shows percent of overall funding dedicated arterials, collectors, bus routes, existing and proposed low-street bikeway network, equity zone, and residential streets
- Shows how funding is prioritized to meetings the policy's goals, including:
    - prioritizes funding for arterials, treating 23% of miles even though arterials comprise 10% of City streets and, per our adopted Vision Zero Action Plan, where severe injuries and fatal traffic crashes are more likely to occur;
    - prioritizes funding for collectors, treating 29% of miles even though collectors comprise 17% of City streets, and, per our adopted Vision Zero Action Plan, where severe injuries and fatal traffic crashes are more likely to occur;
    - prioritizes funding for bikeways, treating 50% of miles even though bikeways comprise 30% of City streets; and
    - prioritizes funding for the Equity Zone, treating 32% of miles even though streets in the Equity Zone comprise 21% of City streets

In addition, the Plan also advances the purpose of Council's *Adequate General Fund Contribution for Street Maintenance to Prevent Deterioration of Pavement Condition* policy. The policy's purpose is to prevent further deterioration of the City's streets. While Berkeley's streets deterioration has occurred steadily over decades, this proposed plan maintains the citywide PCI in the mid 50's.

Below are the projected PCI's for these categories of streets.

Table 3: PCI Projections	Current PCI	PCI after Five Year Plan is Complete
Citywide	55	57

Arterials	58.7	55.1
Collectors	64.4	64.0
Bikeways	63.7	65.5
Bus Route	63	62
Equity Zone	53.2	65.5

The PCI projections for these categories have not been updated to reflect changes made to the Plan since reporting to the TIC (and reported below). In addition, these PCI projections for subcategories under project the PCI at end of plan as they do not include the Plan's significant investment in paving via new utility coordination.

The *Five Year Plan* does not achieve the *Street Maintenance Policy's* goal of good, safe streets. As defined by the Metropolitan Transportation Commission, "good" street condition is a PCI of 70 or above. Per the PCI projections above, neither the citywide network nor any of the subcategories of streets attain "good" street condition in the next five years. But the citywide PCI improves slightly, which is a first in many years; the PCIs for the equity zone and bike network do improve; and funding for arterials and collectors is at or near double the proportion of those streets to the overall street network. More funding is the only means by which the policy's goal of good condition be attained and more progress be shown in the specific street categories.

Transportation and Infrastructure Commission's Advice on the *Five Year Plan* and Changes to Staff's Proposed Plan

At the September 21, 2023 Transportation and Infrastructure Commission (TIC) meeting, the following recommendation to City Council was adopted:

It was Moved / Seconded (Hedlund/Blackaby) to recommend that Council approve the *Five Year Plan* presented by City staff, with the following recommendations:

- Add Milvia from Hearst to Rose St., as a critical section of the bike boulevard network
- Create a "contingency list" to be ready if there are ever unused contingency funds available.
- Add these two segments to that contingency list: o Camelia St from 4th St to 6th St to 9th St from Heinz to Pardee

Ayes: Blackaby, Ghosh, Fixler, Hedlund, Lutzker, Parolek; Noes: Nesbitt; Abstain: None; Absent: Raffanti, Walton (left meeting at 8:11pm); Recused: None

Staff reviewed all three of the TIC's proposed additions. Paving of Milvia from Hearst to Rose (PIC between 24 and 31) and 9th Street from Heinz to Pardee (PCI of 24) both would be consistent with the City's adopted plans and *Street Maintenance Policy*. Camelia Street from 4th to 6th Street (PCI of 46) would be consistent with the City's adopted plans as it would provide a low stress connection between the Gilman Interchange project's bicycle improvements and the existing bicycle boulevard connection

at Camelia and 8th Street. (Camelia between 8th and San Pablo is already a bicycle boulevard and included for paving in the proposed *5 Year Plan*.) The inclusion of these three segments would be beneficial, however the existing plan does not have sufficient money to pay for these additions. Staff have included a clause in this item's resolution by which Council grants staff the authority to pave these street segments if either Council allocates additional funding for them, sufficient contingency remains on the City's annual paving project, or grant funding frees up existing funds to pave one or more of these segments. If funding does not become available for these street segments, then staff will incorporate these segments in the development and adoption of the *5 Year Plan* returning to Council in September to November 2025.

In addition, staff have updated the list of held over segments to include Telegraph between Bancroft and Dwight. This segment was on the existing *5 Year Plan* as part of the bundle of streets for the Southside Complete Streets Project, but was separated from the project by Council on February 22, 2022, to explore limits on private automobiles on this segment.

Staff added Keeler (from Marin to Poppy) and deleted Wildcat from Spiral to East City Limit. Staff added Shattuck between Vine and Hearst and deleted McKinley. The funding for these added segments is offset by the savings from the corresponding subtracted segment.

Performance Measures

The *Street Maintenance Policy* requires the use of performance measures. Beside the reports on PCI above, Public Works updates its annual performance measures here: https://berkeleyca.gov/your-government/about-us/departments/public-works (scroll down and press *Performance and Work Measures Report*). These measures are not limited to the condition of paving surface. They include our progress on implementing green infrastructure and measures important for all users of the street, e.g., the sidewalk repair backlog, percent of commute trips by solo vehicle occupant, miles of bicycle infrastructure, history of lane miles paved, and electrification of the City's fleet.

Use of New Technologies

The *Street Maintenance Policy* suggests review of whether new technology "may provide enhanced durability, lower cost, and more environmentally beneficial impacts." Staff will incorporate proven and cost-effective methods of pavement preservation, some that have never been used in the City, into the light maintenance streets. This potentially includes fiber seal, rubberized cape seal with micro-surfacing, and traditional rubberized cape seals. These methods are traditionally installed by specialized sub-contractors to the City's larger paving projects, and staff are considering a separate procurement intended to save costs by reducing sub-contractors' markup.

Pavement Condition, Vision 2050, and Asset Management

The City has 214 miles of streets with a total replacement value of over $790 million. Our Pavement Condition Index (PCI) is in the mid-50s, which means that the condition of our streets is very much “at risk.” Total deferred maintenance in the City’s streets is in excess of $250 million. Many of the City’s streets have been neglected for so long that they are at the very expensive end of the life-cycle cost curve, as shown in Table 4 below. Without a significant infusion of more new revenue into street maintenance, street improvements will only become more expensive.

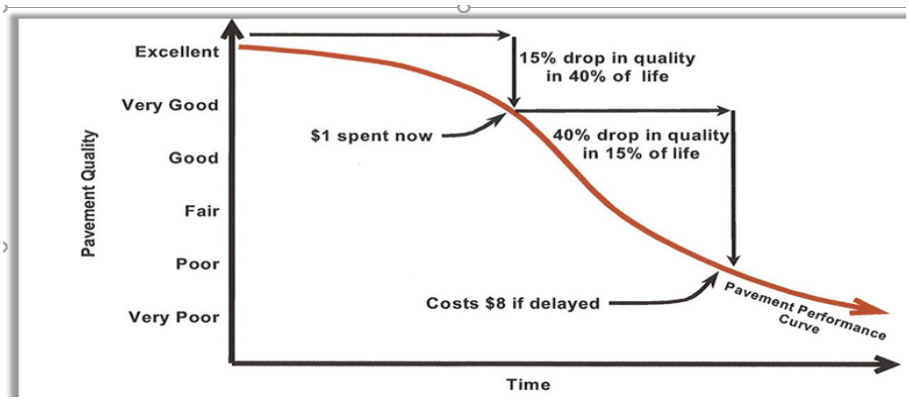
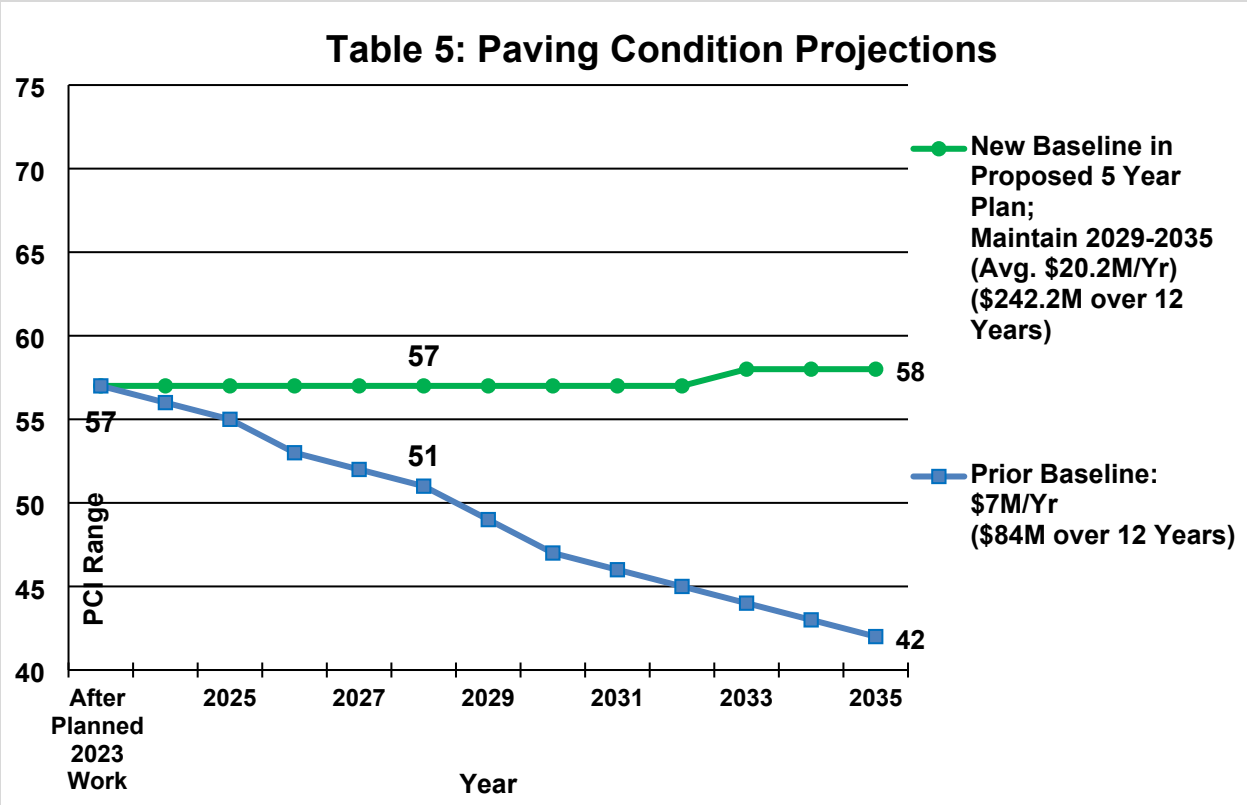


Table 4: Pavement Deterioration and Life Cycle Costs

Table 5 below shows the pavement condition index (PCI) projections under the draft 5 Year Plan, or new baseline, and prior plan, or prior baseline. This table shows the impact of Council’s approval of new revenue for paving. Under the prior baseline reflected by the blue line, the citywide PCI at the end of the plan would be 51, a decline of 5 points, and 42 by 2035.

The green line shows the PCI projection based on the proposed plan’s investments. The PCI will be 57 at the plan’s end and 58 by 2035.

Each of these scenarios also has an effect on the deferred maintenance in our pavement (some refer to this as a paving backlog). The prior baseline (blue line) results in projected deferred maintenance of $545 million by 2035. The new baseline (green) reduces deferred maintenance to $267 million by 2035. This shows that Council’s increased investments in paving over this time period reduce the deferred maintenance in paving by $278 million.



Staff continue to review the information and assumptions in Table 5, so future versions of this chart may reflect more accurate and improved estimates.

After the Council adoption of this proposed *Five Year Plan*, the Engineering and Transportation Divisions will coordinate to identify specific transportation improvements from Council's adopted plans that could be incorporated into the approved street repair projects. Where necessary, the Transportation Division's Planning Unit may lead additional public engagement, design, environmental clearance processes, and/or potentially identify supplemental sources of funding for the transportation improvements.

Adoption of a *Five Year Paving Plan* advances the City's Strategic Plan Priority goals to provide state-of-the-art, well-maintained infrastructure, amenities, and facilities and to create a resilient, safe, connected, and prepared city.

BACKGROUND

The current state of Berkeley's streets continues to be unacceptable. More information can be found in the City Auditor's November 19, 2020 report, *Rocky Road: Berkeley Streets at Risk and Significantly Underfunded*. In addition, Public Works provides a biennial *Pavement Management Program Update*, which provides a description of pavement maintenance treatments, condition data by street segment, and funding scenarios to address deferred street maintenance. The *Update* is available at:

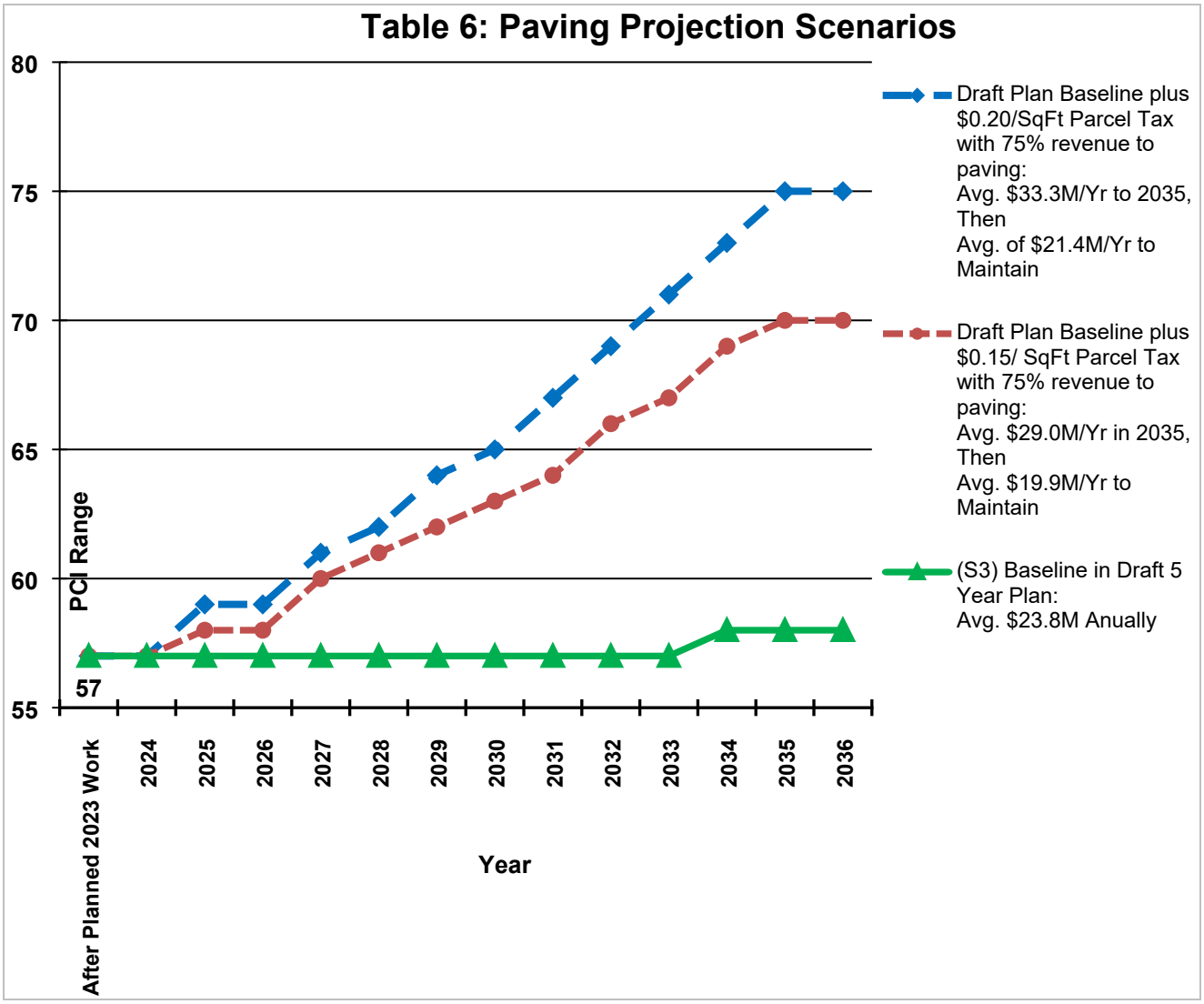
https://berkeleyca.gov/city-services/streets-sidewalks-sewers-and-utilities/street-repair. This *Update* is responsive to the *Street Maintenance Policy*'s requests for "the level of funding and activities needed to expand roadway improvements to achieve the stated goals of this policy."

By a large majority, voters approved Measure R in 2018, which proposed to develop "a 30-year plan to identify and guide implementation of climate-smart, technologically advanced, integrated, and efficient infrastructure to support a safe, vibrant and resilient future for Berkeley." A group of community volunteers drafted a *Vision 2050 Framework*, approved by Council in September 2020, and one of the recommendations of that Framework was development of a *Strategic Asset Management Plan*, which was developed and accepted by Council along with an adopted *Asset Management Policy*. That plan and policy prioritized ensuring our public assets are inventoried, condition assessed, and the use of asset management software. The street network is inventoried, has routine condition assessments, and uses asset management software.

The *Street Maintenance Policy* and *Vision 2050 Framework* both encourage integrated planning. Public Works implementation of *Five Year Plans* has and will continue to include integrated features such as American with Disabilities Act curb ramps, high visibility crosswalks, pervious concrete, speed humps, diverters, pedestrian refuges, traffic circles, and where technically and financially feasible, improvements recommended by the City's adopted Pedestrian and Bicycle Plans. One of the challenges in implementing these plans' elements is the required public processes. Should Council approve the full *5 Year Plan*, staff have enough lead time to build much more of the pedestrian and bicycle plan improvements into the annual paving plan.

The draft *Vision 2050 Program Plan's* first outcome is: *Streets are Safer, More Sustainable, Improved to Good Condition, and Maintained*. Street condition ranked as the City's highest infrastructure need in an October 2021 scientific survey and April 2022 scientific survey, meetings with 25+ commissions and community organizations, and staff's technical review. After overlaying this input with resiliency and sustainability criteria, the *Vision 2050 Program Plan* ranked streets, bicycle and pedestrian projects, and sidewalks as top priorities. In the October 2021 scientific survey, 73% of Berkeley residents ranked repairing deteriorating streets as either extremely or very important.

In addition, at least two community groups are considering street-related, citizens-led initiatives for the November 2024 ballot. These groups have requested Public Works to generate PCI projections based on two different tax amounts. Table 6 shows those projections.



ENVIRONMENTAL SUSTAINABILITY AND CLIMATE IMPACTS

Streets in good condition are lower stress and improve safety for those who bike, walk, or use public transit, thus are important for promoting non-automobile trips and lowering greenhouse gas emissions consistent with the City's 2009 Climate Action Plan and Climate Emergency Declaration. The majority of pavement material that is removed from streets will be returned to the material supplier for processing and recycling for use as aggregate base or pavement aggregate.

RATIONALE FOR RECOMMENDATION

The proposed *Plan* complies with, and advances the priorities within, the City's adopted *Street Maintenance Policy*, introduces more intersection daylighting and green infrastructure, and for the first time in many years, maintains the City's paving condition over the course of the planning period.

ALTERNATIVE ACTIONS CONSIDERED

Staff did not consider alternative actions as the Council is required to update the *Five-Year Plan* per the Policy. If no plan is approved, Public Works will have no streets to design for summer 2024 and no paving will occur. If only a portion of the years are approved, then that will conflict with the priorities in the *Street Maintenance Policy* and *Vision 2050 Framework*, which both urge long term planning, and fewer traffic safety improvements will be implemented through the annual paving project because staff will not be able to plan and conduct the necessary public process.

CONTACT PERSON

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Ronald Nevels, Manager of Engineering, Public Works, 510-981-6439

Attachments:

1. Resolution
   Exhibit A: Proposed Five-Year Street Rehabilitation Plan for FY 2024 to FY 2028
   Exhibit B: Proposed Five-Year Street Rehabilitation Plan Map

RESOLUTION NO. ##,###-N.S.

ADOPTION OF THE FIVE-YEAR STREET REHABILITATION PLAN
FOR FY 2024 TO FY 2028

WHEREAS, the Street Rehabilitation Policy, Resolution No. 70,204-N.S. approved on January 25, 2022, requires a Five Year Street Rehabilitation Plan for the entire City be adopted by Council on a biennial basis; and

WHEREAS, the previously adopted plan included the list of streets in the first three years of the proposed Five Year Plan (FY 2023, FY 2024, and FY 2025); and

WHEREAS, the adopted list of streets is either complete because City Council provided additional paving funding leading to streets being paved earlier than planned or due to some street segments being held over; and

WHEREAS, the *Five Year Street Rehabilitation Plan* is required to be reviewed and updated by the City Council, with advice from the Transportation and Infrastructure Commission; and

WHEREAS, the Transportation and Infrastructure Commission (TIC) reviewed and advised on the Five Year Street Rehabilitation Plan at its September 21, 2023 meeting; and

WHEREAS, Public Works will make its best effort to complete the full paving plan within the five year period and may reorder timing of approved pavement segments for operational reasons; and

WHEREAS, the TIC recommended finding funding to first pave Milvia from Hearst to Rose and then secondarily 9th Street from Heinz to Pardee and Camelia Street from 4th to 6th Street; and

WHEREAS, by approving this *Five Year Plan*, City Council is also granting staff the authority to pave the TIC recommended segments either if Council allocates additional money for these segments, there is sufficient contingency remaining on the City's annual paving projects, or grant funds free up the money to complete any one or more of these segments.

NOW THEREFORE, BE IT RESOLVED by the Council of the City of Berkeley that the *Five Year Street Rehabilitation Plan* for FY 2024 to FY 2028, attached here as Exhibit A with a full map of the Plan as Exhibit B, is adopted.

November 28, 2023

Exhibits
A: Proposed Five-Year Street Rehabilitation Plan for FY 2024 to FY 2028
B: Proposed Five-Year Street Rehabilitation Plan Map

EXHIBIT A
5-YEAR STREET REHABILITATION PLANFOR FY 2024 TO FY 2028

Revised: 10/31/2023

Fiscal Year	Street Name	From	To	Class	Treatment (from StreetSaver)	Updated Total Cost	MRP Reqt	District	Equity Zone	P	Mileage	Current PCI	Last M&R Date	Last Paved
2023* Holdover	CRESTON RD	GRIZZLY PEAK BLVD (N)	SUNSET LANE	R	Heavy Rehab	$ 373,511		6	N	N	0.36	53	6/1/1995	RECONSTRUCT STRUCTURE
2023* Holdover	GRIZZLY PEAK BLVD	NORTH CITY LIMIT (SPRUCE ST)	EUCLID AVE	C	Heavy Rehab	$ 412,165		6	N	3C	0.20	23	11/1/1990	MILL AND THICK OVERLAY
2023* Holdover	GRIZZLY PEAK BLVD	EUCLID AVE	KEELER AVE	C	Heavy Rehab	$ 332,491		6	N	3E, C	0.21	19	11/1/1990	MILL AND THICK OVERLAY
2023* Holdover	GRIZZLY PEAK BLVD	KEELER AVE	MARIN AVE	C	Heavy Rehab	$ 455,344		6	N	3C*, C	0.27	19	10/1/1992	MILL AND OVERLAY W/FABRIC
2023 Holdover	HOPKINS ST	SAN PABLO AVE	STANNAGE AVE	R	Reconstruct	see total below	Y	1	N	4*	0.09	52	9/13/2002	MILL AND OVERLAY W/FABRIC
2023 Holdover	HOPKINS ST	STANNAGE AVE	NORTHSIDE AVE	R	Heavy Rehab	see total below		1	N	4*	0.17	63	9/13/2002	MILL AND OVERLAY W/FABRIC
2023 Holdover	HOPKINS ST	NORTHSIDE AVE	PERALTA AVE	R	Heavy Rehab	see total below		1	N	4*	0.10	70	9/13/2002	MILL AND OVERLAY W/FABRIC
2023 Holdover	HOPKINS ST	PERALTA AVE	GILMAN ST	R	Heavy Rehab	see total below		1	N	4*	0.27	47	9/13/2002	MILL AND OVERLAY W/FABRIC
2023 Holdover	HOPKINS ST	GILMAN ST	SACRAMENTO ST	R	Reconstruct	see total below	Y	1	N	4*, C	0.10	23	9/13/2002	MILL AND OVERLAY W/FABRIC
2023 Holdover	HOPKINS ST	SACRAMENTO ST	HOPKINS CT	A	Reconstruct	see total below	Y	15	N	4*, C, VZ	0.04	45	9/13/2002	MILL AND OVERLAY W/FABRIC
2023 Holdover	HOPKINS ST	HOPKINS CT	MONTEREY AVE	C	Reconstruct	see total below	Y	5	N	4*, C, VZ	0.05	41	9/13/2002	MILL AND OVERLAY W/FABRIC
2023 Holdover	HOPKINS ST	MONTEREY AVE	MC GEE AVE	C	Reconstruct	see total below	Y	5	N	4*, C	0.05	42	12/1/1989	RECONSTRUCT STRUCTURE (AC)
2023 Holdover	HOPKINS ST	MC GEE AVE	CARLOTTA AVE	C	Reconstruct	see total below	Y	5	N	4*, C	0.06	45	12/1/1989	RECONSTRUCT STRUCTURE (AC)
2023 Holdover	HOPKINS ST	CARLOTTA AVE	JOSEPHINE ST	C	Reconstruct	see total below	Y	5	N	4*, C	0.35	40	12/1/1989	MILL AND OVERLAY
2023 Holdover	HOPKINS ST	JOSEPHINE ST	THE ALAMEDA	C	Reconstruct	see total below	Y	5	N	4*, C	0.06	44	7/1/1991	RECONSTRUCT STRUCTURE
2023 Holdover	HOPKINS ST	THE ALAMEDA	SUTTER ST	C	Reconstruct	$ 6,400,000	Y	5	N	4*	0.26	26	7/1/1991	MILL AND THICK OVERLAY
2023* Holdover	ROSEMONT AVE	CRESTON RD	VISTAMONT AVE	R	Heavy Rehab	$ 115,200		6	N	N	0.10	37	10/20/2000	MILL AND OVERLAY
Holdover	TELEGRAPH AVE	BANCROFT WAY	DWIGHT WAY	C	Heavy Rehab	$ 467,840		7	N	4*,C,VZ	0.25	38	7/1/1988	MILL AND OVERLAY W/FABRIC
2023* Holdover	VISTAMONT AVE	WOODMONT AVE	SOUTH END	R	Heavy Rehab	$ 262,044		6	N	N	0.25	39	N/A	
2023* Holdover	VISTAMONT AVE	NORTH END	WOODMONT AVE NEAR SUNSET LN	R	Reconstruct	$ 220,489		6	N	N	0.10	9	N/A	
2023* Holdover	WOODMONT AVE	WILDCAT CANYON & [illegible]	ROSEMONT AVE	R	Reconstruct	$ 428,222		6	N	N	0.22	22	N/A	
2023* Holdover	WOODMONT AVE	ROSEMONT AVE	SUNSET LANE	R	Light Rehab	$ 196,444		6	N	N	0.32	54	10/20/2000	THICK OVERLAY
2023* Holdover	WOODMONT CT	WOODMONT AVE (NORTH)	WOODMONT AVE (SOUTH)	R	Heavy Rehab	$ 58,267		6	N	N	0.05	36	N/A	
	CONTINGENCY					$ 332,202								
	MRP REQUIREMENTS					$ 4,125,000								
	TOTAL					$ 14,179,220					3.96			
					Telegraph Total	$ 467,840								
					Hopkins Total	$ 10,525,000								
					Woodmont Cluster Total	$ 3,186,380								

Note: Column P denotes presence of bike facility type (1 paved path, 2A 2B bike lane, 3A sign-only, 3C Sharrows, 3E bike blvd, 4 cycle track); C for bus route; VZ for Vision Zero; and N for none.

Proposed bike facilities from 2017 Bike Plan.

Fiscal Year	Street Name	From	To	Class	Treatment (from StreetSaver)	Updated Total Cost	MRP Reqt	District	Equity Zone	P	Mileage	Current PCI	Last M&R Date	Last Paved
2024	7TH ST	HARRISON ST	CAMELIA ST	R	Heavy Rehab	$ 420,000		1	Y	N	0.26	19	N/A	
2024	7TH ST	CAMELIA ST	VIRGINIA ST	R	Heavy Rehab	$ 674,400		1	Y	N	0.38	35	4/1/2001	MILL AND OVERLAY W/FABRIC
2024	7TH ST	VIRGINIA ST	UNIVERSITY	R	Heavy Rehab	$ 550,000		1	Y	N	0.31	30	11/1/1990	MILL AND OVERLAY W/FABRIC
2024	10TH ST	CAMELIA ST	CEDAR ST	R	Heavy Mtce	$ 123,600		1	Y	N	0.25	62	4/1/2001	RECONSTRUCT STRUCTURE
2024	10TH ST	CEDAR ST	VIRGINIA ST	R	Heavy Rehab	$ 228,000		1	Y	N	0.13	45	4/1/2001	MILL AND OVERLAY W/FABRIC
2024	10TH ST	VIRGINIA ST	DELAWARE ST	R	Reconstruct	$ 454,800		1	Y	N	0.13	10	9/1/1991	MILL AND OVERLAY W/FABRIC
2024	10TH ST	DELAWARE ST	UNIVERSITY AVE	R	Reconstruct	$ 647,200		1	Y	N	0.18	11	9/1/1991	MILL AND OVERLAY W/FABRIC
2024	ACROFT CT	ACTON ST	DEAD END	R	Heavy Mtce	$ 12,000		2	Y	N	0.05	60	11/1/1988	RECONSTRUCT SURFACE
2024	ACTON CIRCLE	DEAD END	ACTON	R	Reconstruct	$ 57,920		2	Y	N	0.02	25	N/A	
2024	ACTON CRESCENT	ACTON ST	EAST DEAD	R	Reconstruct	$ 179,853		2	Y	N	0.09	27	N/A	
2024	ACTON ST	ADDISON ST	UNIVERSITY	R	Heavy Rehab	$ 102,667		2	Y	N	0.06	41	8/10/1998	MILL AND OVERLAY W/FABRIC
2024	ACTON ST	ADDISON ST	BANCROFT WAY	R	Heavy Rehab	$ 372,000		2	Y	N	0.26	42	12/1/1987	RECONSTRUCT SURFACE
2024	ACTON ST	BANCROFT WAY	DWIGHT WAY	R	Reconstruct	$ 884,480		2	Y	N	0.25	17	10/1/1992	MILL AND THICK OVERLAY
2024	ACTON ST	DWIGHT WAY	BLAKE ST	R	Heavy Rehab	$ 114,400		2	Y	N	0.06	36	6/16/2000	RECONSTRUCT SURFACE
2024	ACTON ST	BLAKE ST	PARKER ST	R	Reconstruct	$ 231,200		2	Y	N	0.06	12	N/A	
2024	ACTON ST	PARKER ST	WARD ST	R	Reconstruct	$ 635,120		2	Y	N	0.17	15	10/1/1992	MILL AND OVERLAY W/FABRIC
2024	CAMELIA ST	8TH ST	SAN PABLO AVE	R	Reconstruct	$ 697,680		1	Y	3E	0.20	19	4/1/2001	RECONSTRUCT SURFACE
2024	CHANNING WAY	SAN PABLO AVE	SACRAMENTO	R	Heavy Rehab	$ 914,500		2	Y	3E	0.53	50	9/2/2008	MILL AND THICK OVERLAY
2024*	CORNELL AVE	NORTH CITY	GILMAN ST	R	Heavy Rehab	$ 102,000		1	N	N	0.14	40	11/1/1986	MILL AND OVERLAY W/FABRIC
2024	DERBY ST	MABEL ST	SACRAMENTO ST	R	Heavy Rehab	$ 456,020		2	Y	3E	0.25	32	10/1/1992	MILL AND OVERLAY W/FABRIC
2024	EUCLID AVE	GRIZZLY PEAK	MARIN AVE	C	Heavy Mtce	$ 311,242		6	N	C	0.58	73	11/30/2001	RECONSTRUCT STRUCTURE
2024	EUCLID AVE	MARIN AVE	REGAL RD	R	Heavy Mtce	$ 96,667		6	N	C	0.11	69	11/21/2001	RECONSTRUCT STRUCTURE
2024	EUCLID AVE	REGAL RD	CRAGMONT	C	Heavy Mtce	$ 180,778		6	N	C	0.28	71	11/30/2001	RECONSTRUCT STRUCTURE
2024	GILMAN ST	SAN PABLO AVE	SANTA FE AVE	A	Heavy Rehab	$ 683,116		1	N	4*, C	0.27	48	10/2007	MILL AND OVERLAY
2024	HEARST AVE	6TH ST	SAN PABLO AVE	C	Reconstruct	$ 1,306,200		1	Y	N	0.31	25	10/1/1994	MILL AND OVERLAY W/FABRIC
2024	KEITH AVE	SPRUCE ST	EUCLID AVE	C	Heavy Mtce	$ 106,759		6	N	N	0.28	70	6/5/2016	SLURRY SEAL
2024	KEITH AVE	EUCLID AVE	SHASTA RD	C	Heavy Mtce	$ 181,120		6	N	N	0.49	74	6/5/2016	SLURRY SEAL
2024	MABEL ST	DWIGHT WAY	PARKER ST	R	Heavy Rehab	$ 236,400		2	Y	3E	0.12	31	9/1/1993	MILL AND OVERLAY W/FABRIC
2024	MABEL ST	PARKER ST	DERBY ST	R	Reconstruct	$ 468,400		2	Y	3E	0.12	21	10/1/1992	MILL AND OVERLAY W/FABRIC
2024	MABEL ST	DERBY ST	WARD ST	R	Heavy Rehab	$ 97,400		2	Y	3E	0.06	33	10/1/1992	MILL AND OVERLAY W/FABRIC
2024	SHATTUCK AVE	VINE ST	CEDAR ST	A	Heavy Rehab	$ 283,262		5	N	C,VZ	0.13	21	10/1/1996	RECONSTRUCT SURFACE
2024	SHATTUCK AVE	CEDAR ST	HEARST AVE	A	Heavy Rehab	$ 716,738		4	N	C,VZ	0.32	22	10/1/1996	RECONSTRUCT SURFACE
2024	SPRUCE ST	GRIZZLY PEAK	ALTA RD	C	Heavy Mtce	$ 80,090		56	N	3C, C	0.15	70	8/12/2005	RECONSTRUCT STRUCTURE
2024	SPRUCE ST	ALTA RD	MARIN AVE	C	Light Mtce	$ 183,713		56	N	3C, C	0.83	76	8/12/2005	RECONSTRUCT STRUCTURE
2024	SPRUCE ST	MARIN AVE	ARCH ST	C	Light Mtce	$ 94,599		56	N	3C, C	0.33	72	8/12/2005	RECONSTRUCT STRUCTURE
2024	SPRUCE ST	EUNICE ST	ROSE ST	C	Heavy Mtce	$ 126,430		56	N	3C, C	0.26	66	6/15/2016	ARAM CAPE SEAL
2024	SPRUCE ST	ROSE ST	VINE ST	R	Heavy Mtce	$ 56,865		56	N	3C	0.13	69	12/1/2017	ARAM CAPE SEAL
2024	SPRUCE ST	VINE ST	CEDAR ST	R	Heavy Mtce	$ 54,809		56	N	3C	0.13	67	6/15/2016	ARAM CAPE SEAL
2024	SPRUCE ST	CEDAR ST	VIRGINIA ST	R	Light Mtce	$ 35,171		6	N	3C	0.13	87	10/10/2016	RECONSRUCT SURFACE
2024	SPRUCE ST	VIRGINIA ST	HEARST AVE	R	Heavy Mtce	$ 91,696		6	N	3C	0.20	64	6/15/2016	SLURRY SEAL
2024	VIRGINIA ST	SAN PABLO AVE	ACTON ST	R	Light Mtce	$ 86,000		1	N	3E	0.47	82	8/29/2008	MILL AND THICK OVERLAY
2024	VIRGINIA ST	ACTON ST	SACRAMENTO	R	Heavy Mtce	$ 91,367		1	N	3E	0.13	74	8/29/2008	MILL AND THICK OVERLAY
2024	VIRGINIA ST	SACRAMENTO	MC GEE AVE	C	Heavy Rehab	$ 502,440		1	N	3E	0.24	48	7/21/1997	MILL AND OVERLAY W/FABRIC
2024	VIRGINIA ST	MC GEE AVE	GRANT ST	C	Heavy Mtce	$ 79,180		1	N	3E	0.13	60	6/1/1995	MILL AND OVERLAY W/FABRIC
2024	VIRGINIA ST	GRANT ST	MARTIN	C	Light Mtce	$ 38,800		1	N	3E	0.13	78	6/1/1995	MILL AND OVERLAY W/FABRIC
2024	UTILITY COORDINATION					$ 365,000								
	CONTINGENCY					$ 1,404,708								
	MRP REQUIREMENTS					$ -								
	TOTAL FUNDING				16884585	$ 15,816,790					10.08			
						32%		bike/ped						
* in Fiscal Year column denotes coordination with EBMUD project						35%		bike/ped not incl contingency or MRP reqts						

Note: Column P denotes presence of bike facility type (1 paved path, 2A 2B bike lane, 3A sign-only, 3C Sharrows, 3E bike blvd, 4 cycle track); C for bus route; VZ for Vision Zero; and N for none.

Proposed bike facilities from 2017 Bike Plan.

Fiscal Year	Street Name	From	To	Class	Treatment (from StreetSaver)	Updated Total Cost	MRP Reqt	District	Equity Zone	P	Mileage	Current PCI	Last M&R Date	Last Paved

FISCAL YEAR 2024 TOTALS

Total Estimated Cost and Miles $15,816,790 10.08 miles

	Mileage	Estimated Cost	% Cost	% Mileage
Arterials	0.71	$1,683,116	12%	7%
Collectors	4.00	$3,191,352	22%	40%
Residentials	5.36	$9,172,614	64%	53%
Bikeways	4.79	$5,074,676	35%	48%
Curb Ramps		$756,000	5%	
Total		$5,830,676	40%	
Equity Zone	4.24	$9,864,240	68%	42%
Equity Zone w/Arterials	4.24	$9,864,240	68%	42%

District	Cost	Miles	Cost w/o Arterials	Miles w/o Arterials
1	$6,684,783	3.65	$6,001,667	3.38
2	$4,762,360	2.10	$4,762,360	2.10
3	$0	0.00	$0	0.00
4	$716,738	0.32	$0	0.00
5	$581,515	1.03	$298,253	0.91
6	$1,301,686	2.97	$1,301,686	2.97
7	$0	0.00	$0	0.00
8	$0	0.00	$0	0.00
	$14,047,082	10.08	$12,363,966	9.36

Note: Column P denotes presence of bike facility type (1 paved path, 2A 2B bike lane, 3A sign-only, 3C Sharrows, 3E bike blvd, 4 cycle track); C for bus route; VZ for Vision Zero; and N for none.

Proposed bike facilities from 2017 Bike Plan.

Fiscal Year	Street Name	From	To	Class	Treatment (from StreetSaver)	Updated Total Cost	MRP Reqt	District	Equity Zone	P	Mileage	Current PCI	Last M&R Date	Last Paved
2025	ALLSTON WAY	MILVIA ST	SHATTUCK AVE	R	Heavy Rehab	$ 228,800		4	N	N	0.14	37	11/1/1990	MILL AND THIN OVERLAY
2025	ARLINGTON AVE	NORTH CITY	THOUSAND	C	Heavy Mtce	$ 343,375		5	N	3C,C	0.51	65	1/21/2005	RECONSTRUCT STRUCTURE
2025	ARLINGTON AVE	THOUSAND	THE CIRCLE	C	Heavy Mtce	$ 420,916		5	N	3C,C	0.56	65	1/21/2005	RECONSTRUCT STRUCTURE
2025	BANCROFT WAY	SAN PABLO AVE	WEST ST	R	Heavy Mtce	$ 121,920		2	Y	N	0.29	54	12/1/1987	RECONSTRUCT SURFACE
2025	BANCROFT WAY	WEST ST	SACRAMENTO	R	Heavy Mtce	$ 89,680		2	Y	N	0.21	69	12/1/1987	RECONSTRUCT SURFACE
2025	BANCROFT WAY	SACRAMENTO	MARTIN	R	Heavy Rehab	$ 940,800		4	N	N	0.50	33	11/1/1990	MILL AND THIN OVERLAY
2025	CALIFORNIA ST	OREGON ST	ASHBY AVE	R	Heavy Rehab	$ 363,667		3	Y	3E	0.18	34	10/1/1994	MILL AND OVERLAY W/FABRIC
2025	EUCLID AVE	BAYVIEW PL	CEDAR ST	C	Heavy Rehab	$ 695,412		6	N	3C, C	0.36	28	11/1/1990	MILL AND OVERLAY W/FABRIC
2025	EUCLID AVE	CEDAR ST	HEARST AVE	C	Heavy Rehab	$ 614,509		6	N	3C, C	0.31	41	11/1/1990	MILL AND OVERLAY W/FABRIC
2025	HARMON ST	IDAHO ST	SACRAMENTO	R	Reconstruct	$ 829,900		2	Y	3E	0.19	15	9/1/1991	MILL AND OVERLAY W/FABRIC
2025	HASTE ST	PIEDMONT AVE	COLLEGE AVE	A	Heavy Rehab	$ 270,400		7	N	VZ	0.12	43	8/1/1993	MILL AND OVERLAY W/FABRIC
2025	HASTE ST	COLLEGE AVE	BOWDITCH ST	A	Heavy Rehab	$ 313,947		7	N	VZ	0.13	41	8/1/1993	MILL AND OVERLAY W/FABRIC
2025	HASTE ST	BOWDITCH ST	FULTON ST	A	Heavy Rehab	$ 1,304,756		47	N	VZ	0.51	35	8/1/1993	MILL AND OVERLAY W/FABRIC
2025	HASTE ST	FULTON ST	SHATTUCK AVE	A	Heavy Rehab	$ 241,280		4	N	VZ	0.11	29	8/1/1993	MILL AND OVERLAY W/FABRIC
2025	IDAHO ST	66TH ST	ALCATRAZ AVE	R	Reconstruct	$ 547,888		2	Y	3E	0.16	18	5/1/1996	THIN AC OVERLAY
2025	KEELER AVE	MARIN AVE	MILLER AVE	R	Reconstruct	$ 384,878		6	N	N	0.19	14	8/1/1991	MILL AND THICK OVERLAY
2025	KEELER AVE	MILLER AVE	POPPY LN	R	Reconstruct	$ 208,800		6	N	N	0.11	17	8/1/1991	MILL AND THICK OVERLAY
2025	MABEL ST	WARD ST	RUSSELL ST	R	Heavy Rehab	$ 388,790		2	Y	3E	0.23	29	9/1/1991	MILL AND OVERLAY W/FABRIC
2025	MABEL ST	RUSSELL ST	ASHBY AVE	R	Heavy Rehab	$ 178,360		2	Y	3E	0.10	32	9/1/1991	MILL AND OVERLAY W/FABRIC
2025	MABEL ST	ASHBY AVE	66TH ST	R	Heavy Mtce	$ 111,480		2	Y	3E	0.24	71	6/30/2010	MILL AND THIN OVERLAY
2025	MATHEWS ST	WARD ST	RUSSELL ST	R	Heavy Rehab	$ 392,560		2	Y	N	0.23	25	11/1/1990	MILL AND THIN OVERLAY
2025	MENDOCINO AVE	ARLINGTON AVE	LOS ANGELES	R	Reconstruct	$ 721,600		5	N	N	0.31	22	N/A	
2025	MENDOCINO PL	MENDOCINO AVE	LOS ANGELES	R	Reconstruct	$ 52,116		5	N	N	0.02	21	N/A	
2025	OREGON ST	SAN PABLO AVE	MABEL ST	R	Reconstruct	$ 537,740		2	Y	3E	0.15	18	11/1/1990	MILL AND THIN OVERLAY
2025	OREGON ST	CALIFORNIA ST	GRANT ST	R	Reconstruct	$ 895,264	Y	3	Y	N	0.25	10	10/1/1992	MILL AND OVERLAY W/FABRIC
2025	OREGON ST	GRANT ST	MARTIN LUTHER KING	R	Heavy Rehab	$ 156,000		3	Y	N	0.09	31	6/16/2000	RECONSTRUCT SURFACE
2025	PARK ST	WARD ST	BURNETT ST	R	Reconstruct	$ 894,128	Y	2	Y	N	0.26	18	9/1/1991	MILL AND OVERLAY W/FABRIC
2025	RUSSELL ST	SAN PABLO AVE	PARK ST	R	Reconstruct	$ 815,755	Y	2	Y	3E	0.23	29	9/1/1991	MILL AND OVERLAY W/FABRIC
2025	SACRAMENTO ST	UNIVERSITY AVE	DWIGHT WAY	A	Light Mtce	$ 224,075		24	Y	C,VZ	0.57	69	12/2/2011	MILL AND THICK OVERLAY
2025	SACRAMENTO ST (SB)	DWIGHT WAY	OREGON ST	A	Light Mtce	$ 98,560		23	Y	C,VZ	0.44	75	11/21/2011	RECONSTRUCT STRUCTURE
2025	SACRAMENTO ST (NB)	OREGON ST	DWIGHT WAY	A	Light Mtce	$ 101,640		23	Y	C,VZ	0.44	82	11/21/2011	RECONSTRUCT STRUCTURE
2025	SACRAMENTO ST	OREGON ST	ASHBY AVE	A	Light Mtce	$ 97,764		23	Y	C,VZ	0.19	86	11/21/2011	RECONSTRUCT STRUCTURE
2025	SACRAMENTO ST	ASHBY AVE	SOUTH CITY LIMIT	A	Light Mtce	$ 184,662		2	Y	C,VZ	0.41	84	6/26/2013	MILL AND OVERLAY
2025	WALLACE ST	WARD ST	RUSSELL ST	R	Reconstruct	$ 790,089		2	Y	N	0.23	17	11/1/1990	MILL AND THIN OVERLAY
2025	WILDCAT CANYON RD	GRIZZLY PEAK	SUNSET LANE	C	Light Mtce	$ 121,347		6	N	3C	0.71	78	7/25/2014	MILL AND OVERLAY
2025	WILDCAT CANYON RD	SUNSET LN	THE SPIRAL	C	Light Mtce	$ 72,734		6	N	3C	0.45	78	7/25/2014	MILL AND OVERLAY
2025	UTILITY					$ 913,000								
	CONTINGENCY					$ 1,475,559								
	MRP REQUIREMENTS					$ 1,125,000								
					18269887	$18,269,150					10.11			
						33%		bike/ped						
						39%		bike/ped not incl contingency or MRP reqts						

Note: Column P denotes presence of bike facility type (1 paved path, 2A 2B bike lane, 3A sign-only, 3C Sharrows, 3E bike blvd, 4 cycle track); C for bus route; VZ for Vision Zero; and N for none.

Proposed bike facilities from 2017 Bike Plan.

Fiscal Year	Street Name	From	To	Class	Treatment (from StreetSaver)	Updated Total Cost	MRP Reqt	District	Equity Zone	P	Mileage	Current PCI	Last M&R Date	Last Paved

FISCAL YEAR 2025 TOTALS

Total Estimated Cost and Miles $18,269,150 10.11 miles

	Mileage	Estimated Cost	% Cost	% Mileage
Arterials	2.91	$2,837,084	18%	29%
Collectors	2.89	$2,268,293	14%	29%
Residentials	4.31	$9,650,214	62%	43%
Bikeways	4.37	$6,041,873	39%	43%
Curb Ramps		$0	0%	
Total		$6,041,873	39%	
Equity Zone	2.53	$6,901,621	44%	25%
Equity Zone w/Arterials	4.57	$7,608,322	49%	45%

District	Cost	Miles	Cost w/o Arterials	Miles w/o Arterials
1	$0	0.00	$0	0.00
2	$6,143,972	3.74	$5,698,290	2.51
3	$1,563,913	1.05	$1,414,931	0.51
4	$2,175,296	1.28	$1,169,600	0.64
5	$1,538,007	1.40	$1,538,007	1.40
6	$2,097,680	2.13	$2,097,680	2.13
7	$1,236,725	0.50	$0	0.00
8	$0	0.00	$0	0.00
	$14,755,591	10.11	$11,918,507	7.20

Note: Column P denotes presence of bike facility type (1 paved path, 2A 2B bike lane, 3A sign-only, 3C Sharrows, 3E bike blvd, 4 cycle track); C for bus route; VZ for Vision Zero; and N for none.

Proposed bike facilities from 2017 Bike Plan.

5-YEAR STREET REHABILITATION PLAN FOR FY 2024 TO FY 2028

Revised: 10/31/2023

Fiscal Year	Street Name	From	To	Class	Treatment (from StreetSaver)	Updated Total Cost	MRP Reqt	District	Equity Zone	P	Mileage	Current PCI	Last M&R Date	Last Paved
2026	ACTON ST	WARD ST	RUSSELL ST	R	Reconstruct	$ 781,024		2	Y	N	0.22	16	10/1/1992	MILL AND OVERLAY W/FABRIC
2026	ACTON ST	RUSSELL ST	ASHBY AVE	R	Light Mtce	$ 16,183		2	Y	N	0.09	77	6/15/2016	ARAM CAPE SEAL
2026	ADDISON ST	AQUATIC PARK	RRX	R	Heavy Mtce	$ 42,898		2	N	3E	0.09	69	2/24/2012	RECONSTRUCT STRUCTURE
2026	ADDISON ST	RRX	4TH ST	R	Light Mtce	$ 13,304		2	N	3E	0.06	80	8/27/1987	MILL AND OVERLAY W/FABRIC
2026	ADDISON ST	4TH ST	6TH ST	R	Reconstruct	$ 470,580		2	Y	3E	0.13	18	8/27/1987	MILL AND OVERLAY W/FABRIC
2026*	ADDISON ST	6TH ST	SAN PABLO AVE	R	Reconstruct	$ 1,146,652		2	Y	3E	0.31	16	8/27/1997	MILL AND OVERLAY W/FABRIC
2026	ADDISON ST	SAN PABLO AVE	CURTIS ST	R	Reconstruct	$ 485,880		2	Y	3E	0.14	23	8/18/1997	MILL AND OVERLAY W/FABRIC
2026	ALCATRAZ AVE	SACRAMENTO ST	ADELINE ST	C	Heavy Mtce	$ 224,284		3	Y	2B	0.35	65	N/A	
2026	ALCATRAZ AVE	ADELINE ST	CITY LIMIT	C	Light Mtce	$ 63,833		3	N	2A	0.17	91	8/14/2015	MILL AND OVERLAY
2026	COLUSA AVE	SOLANO AVE	MARIN AVE	C	Heavy Mtce	$ 90,462		5	N	2A	0.13	68	12/1/1989	RECONSTRUCT STRUCTURE
2026	DOHR ST	WARD ST	RUSSELL ST	R	Reconstruct	$ 791,520		2	Y	N	0.22	19	10/1/1992	MILL AND OVERLAY W/FABRIC
2026	DOHR ST	RUSSELL ST	ASHBY AVE	R	Reconstruct	$ 202,035		2	Y	N	0.09	21	10/1/1992	MILL AND OVERLAY W/FABRIC
2026	FRANCISCO ST	SACRAMENTO	MARTIN	R	Reconstruct	$ 1,796,160		1	N	N	0.49	19	10/1/1995	RECONSTRUCT SURFACE
2026	GRIZZLY PEAK BLVD	HILL RD	EAST CITY LIMIT	C	Heavy Rehab	$ 841,827		6	N	3C, C	0.48	50	11/1/1986	THICK OVERLAY W/FABRIC
2026	HARMON ST	SACRAMENTO ST	ADELINE ST	R	Heavy Mtce	$ 249,800		3	Y	3E	0.38	63	12/1/1989	RECONSTRUCT STRUCTURE
2026	MARIN AVE	WEST CITY LIMIT	THE ALAMEDA	A	Light Mtce	$ 160,300		5	N	2A,VZ	0.31	81	11/30/2011	MILL AND THICK OVERLAY
2026	MARIN AVE	THE ALAMEDA	THE CIRCLE	A	Light Mtce	$ 111,800		5	N	2A,C,VZ	0.22	79	11/30/2011	MILL AND THICK OVERLAY
2026	MARTIN LUTHER KING	YOLO AVE	CEDAR ST	A	Heavy Mtce	$ 313,200		5	N	C,VZ	0.49	52	8/11/2008	MILL AND THICK OVERLAY
2026	MARTIN LUTHER KING	CEDAR ST	UNIVERSITY AVE	A	Heavy Mtce	$ 496,440		14	N	C,VZ	0.56	61	8/11/2008	MILL AND THICK OVERLAY
2026	MARTIN LUTHER KING	UNIVERSITY AVE	ADDISON ST	A	Heavy Rehab	$ 246,412		4	N	C,VZ	0.06	90	3/26/2022	SLURRY SEAL
2026	MARTIN LUTHER KING	ADDISON ST	ALLSTON WAY	A	Heavy Rehab	$ 461,067		4	N	C,VZ	0.13	53	8/11/2008	MILL AND THICK OVERLAY
2026	MARTIN LUTHER KING	ALLSTON WAY	DWIGHT WAY	A	Light Rehab	$ 997,920		4	N	C,VZ	0.38	62	8/11/2008	MILL AND THICK OVERLAY
2026	MARTIN LUTHER KING	DWIGHT WAY	ASHBY AVE	A	Light Rehab	$ 1,705,032		3	Y	C,VZ	0.64	55	8/11/2008	MILL AND THICK OVERLAY
2026	MARTIN LUTHER KING	ASHBY AVE	WOOLSEY/ADELINE	A	Heavy Mtce	$ 192,075		3	Y	C,VZ	0.19	65	8/11/2008	MILL AND THICK OVERLAY
2026	MONTEREY AVE	MARIN AVE	THE ALAMEDA	C	Light Mtce	$ 27,111		5	N	C	0.08	85	11/30/2011	MILL AND THICK OVERLAY
2026	OREGON ST	PARK ST	SACRAMENTO	R	Reconstruct	$ 640,912		2	Y	N	0.19	24	11/1/1990	MILL AND THIN OVERLAY
2026	RUSSELL ST	PARK ST	SACRAMENTO	R	Reconstruct	$ 685,276		2	Y	3E	0.19	25	8/1/1993	MILL AND OVERLAY W/FABRIC
2026	SACRAMENTO ST	HOPKINS ST	ROSE ST	A	Heavy Mtce	$ 127,212		15	N	VZ	0.15	59	12/1/1989	RECONSTRUCT STRUCTURE
2026	SACRAMENTO ST	ROSE ST	CEDAR ST	A	Heavy Mtce	$ 167,310		15	N	VZ	0.16	60	8/26/2008	MILL AND THICK OVERLAY
2026	SACRAMENTO ST	CEDAR ST	VIRGINIA ST	A	Heavy Rehab	$ 530,613		2	N	C,VZ	0.13	44	8/26/2008	MILL AND THICK OVERLAY
2026	SACRAMENTO ST	VIRGINIA ST	UNIVERSITY	A	Light Mtce	$ 169,280		2	N	C,VZ	0.30	84	8/14/2015	MILL AND OVERLAY
2026	SOLANO AVE	TULARE AVE	COLUSA AVE	C	Light Mtce	$ 80,710		5	N	4*,C	0.14	79	8/9/2005	RECONSTRUCT STRUCTURE
2026	SOLANO AVE	COLUSA AVE	THE ALAMEDA	C	Light Mtce	$ 52,850		5	N	4*,C	0.14	78	8/9/2005	RECONSTRUCT STRUCTURE
2026	SOLANO AVE	THE ALAMEDA	CONTRA COSTA	C	Heavy Mtce	$ 62,043		5	N	4*,C	0.10	70	12/1/2017	SLURRY SEAL
2026	NORTHBRAE TUNNEL	CONTRA COSTA	DEL NORTE ST	C	Light Mtce	$ 38,728		5	N	4*,C	0.27	92	11/30/2017	RECONSTRUCT STRUCTURE
2026	THE ALAMEDA	SOLANO AVE	MARIN AVE	A	Light Mtce	$ 91,000		5	N	4*,C	0.18	92	11/30/2017	MILL AND THICK OVERLAY
2026	THE ALAMEDA	MARIN AVE	HOPKINS ST	A	Light Mtce	$ 134,827		5	N	4*,C	0.26	92	11/30/2017	MILL AND THICK OVERLAY
2026	THE ALAMEDA	HOPKINS ST	YOLO AVE	A	Heavy Mtce	$ 41,580		5	N	C	0.04	69	12/1/2017	SLURRY SEAL
2026	THOUSAND OAKS	COLUSA AVE	VINCENTE AVE	C	Heavy Mtce	$ 36,006		5	N	N	0.07	74	6/15/2016	SLURRY SEAL
2026	THOUSAND OAKS	VINCENTE AVE	THE ALAMEDA	C	Heavy Mtce	$ 82,133		5	N	N	0.16	68	6/15/2016	SLURRY SEAL
2026	THOUSAND OAKS	THE ALAMEDA	ARLINGTON	C	Heavy Mtce	$ 139,843		5	N	N	0.30	73	6/15/2016	SLURRY SEAL
2026	UTILITY					$ 900,000								
	CONTINGENCY					$ 1,500,812								
	MRP REQUIREMENTS					$ -								
					17412997	$17,408,935					9.18			
						29%		bike/ped						
* in Fiscal Year column denotes coordination with EBMUD project						32%		bike/ped not incl contingency						

Note: Column P denotes presence of bike facility type (1 paved path, 2A 2B bike lane, 3A sign-only, 3C Sharrows, 3E bike blvd, 4 cycle track); C for bus route; VZ for Vision Zero; and N for none.

Proposed bike facilities from 2017 Bike Plan.

Fiscal Year	Street Name	From	To	Class	Treatment (from StreetSaver)	Updated Total Cost	MRP Reqt	District	Equity Zone	P	Mileage	Current PCI	Last M&R Date	Last Paved

FISCAL YEAR 2026 TOTALS

Total Estimated Cost and Miles $17,408,935 9.18 miles

	Mileage	Estimated Cost	% Cost	% Mileage
Arterials	4.19	$5,946,067	37%	46%
Collectors	2.39	$1,739,831	11%	26%
Residentials	2.60	$7,322,225	46%	28%
Bikeways	4.04	$5,047,055	32%	44%
Curb Ramps		$480,000	3%	
Total		$5,527,055	35%	
Equity Zone	2.31	$5,694,147	36%	25%
Equity Zone w/Arterials	3.13	$7,591,254	48%	34%

District	Cost	Miles	Cost w/o Arterials	Miles w/o Arterials
1	$2,191,641	0.93	$1,796,160	0.49
2	$5,976,158	2.16	$5,276,265	1.73
3	$2,435,025	1.72	$2,435,025	1.72
4	$1,953,618	0.84	$0	0.00
5	$1,609,854	3.05	$609,886	1.39
6	$841,827	0.48	$841,827	0.48
7	$0	0.00	$0	0.00
8	$0	0.00	$0	0.00
	$15,008,123	9.18	$10,959,163	5.82

Note: Column P denotes presence of bike facility type (1 paved path, 2A 2B bike lane, 3A sign-only, 3C Sharrows, 3E bike blvd, 4 cycle track); C for bus route; VZ for Vision Zero; and N for none.

Proposed bike facilities from 2017 Bike Plan.

Fiscal Year	Street Name	From	To	Class	Treatment (from StreetSaver)	Updated Total Cost	MRP Reqt	District	Equity Zone	P	Mileage	Current PCI	Last M&R Date	Last Paved
2027	6TH	CAMELIA ST	CEDAR ST	C	Heavy Mtce	$ 217,778		1	Y	2B, VZ	0.25	74	8/31/2004	MILL AND OVERLAY W/FABRIC
2027	6TH	CEDAR ST	VIRGINIA ST	C	Heavy Rehab	$ 446,925		1	Y	2B, VZ	0.13	54	4/1/2001	MILL AND OVERLAY W/FABRIC
2027	6TH	VIRGINIA ST	UNIVERSITY AVE	C	Light Rehab	$ 729,619		1	Y	2B, VZ	0.31	63	4/1/2001	MILL AND OVERLAY W/FABRIC
2027	8TH ST	GILMAN ST	CAMELIA ST	R	Heavy Rehab	$ 212,445		1	Y	3E	0.12	35	4/1/2001	MILL AND OVERLAY W/FABRIC
2027	8TH ST	CAMELIA ST	PAGE ST	R	Heavy Rehab	$ 144,978		1	Y	N	0.08	42	4/1/2001	MILL AND OVERLAY W/FABRIC
2027	8TH ST	PAGE ST	JONES ST	R	Reconstruct	$ 293,378	Y	1	Y	N	0.09	16	9/1/1991	MILL AND OVERLAY W/FABRIC
2027	8TH ST	JONES ST	VIRGINIA ST	R	Reconstruct	$ 710,367	Y	1	Y	N	0.21	19	9/1/1991	MILL AND OVERLAY W/FABRIC
2027	8TH ST	VIRGINIA ST	UNIVERSITY AVE	R	Reconstruct	$ 1,131,612	Y	1	Y	N	0.31	17	11/1/1990	MILL AND THIN OVERLAY
2027	BATAAN AVE	7TH ST	8TH ST	R	Reconstruct	$ 144,294		1	Y	N	0.06	16	N/A	
2027	BELROSE AVE	DERBY ST	CLAREMONT	C	Light Mtce	$ 30,289		8	N	4*,C	0.12	91	10/10/2016	RECONSTRUCT
2027	BOWDITCH ST	BANCROFT WAY	DURANT AVE	R	Reconstruct	$ 221,880		7	N	2A	0.06	14	11/1/1990	MILL AND THIN OVERLAY
2027	BOWDITCH ST	DURANT AVE	HASTE ST	R	Reconstruct	$ 450,660		7	N	2A	0.13	17	11/1/1990	MILL AND THIN OVERLAY
2027	BOWDITCH ST	HASTE ST	DWIGHT WAY	R	Heavy Rehab	$ 123,000		7	N	2A	0.06	40	7/1/1988	MILL AND OVERLAY W/FABRIC
2027	CAMELIA ST	6TH ST	8TH ST	R	Reconstruct	$ 406,720		1	Y	N	0.12	24	4/1/2001	RECONSTRUCT SURFACE
2027	CHANNING WAY	SHATTUCK AVE	FULTON ST	R	Light Mtce	$ 37,720		4	N	2B	0.11	87	8/7/2015	MILL AND OVERLAY
2027	CHANNING WAY	FULTON ST	DANA ST	R	Light Mtce	$ 87,880		47	N	2B	0.25	87	8/7/2015	MILL AND OVERLAY
2027	CHANNING WAY	DANA ST	BOWDITCH ST	R	Light Mtce	$ 92,644		7	N	2B	0.25	78	8/7/2015	MILL AND OVERLAY
2027	CHANNING WAY	BOWDITCH ST	COLLEGE AVE	R	Heavy Mtce	$ 81,844		7	N	2B	0.13	76	8/7/2015	MILL AND OVERLAY
2027	CHANNING WAY	COLLEGE AVE	PIEDMONT AVE	R	Heavy Mtce	$ 72,000		7	N	2B	0.12	72	8/7/2015	MILL AND OVERLAY
2027	CLAREMONT AVE	EAST CITY LIMIT	RUSSELL ST	C	Reconstruct	$ 497,733	Y	8	N	VZ	0.11	21	7/1/1994	MILL AND OVERLAY W/FABRIC
2027	CLAREMONT AVE	RUSSELL ST	ASHBY AVE	C	Reconstruct	$ 506,511	Y	8	N	4,VZ	0.08	18	7/1/1994	MILL AND OVERLAY W/FABRIC
2027	CLAREMONT AVE	ASHBY AVE	SOUTH CITY	C	Heavy Rehab	$ 1,790,524		8	N	4,VZ	0.57	53	7/1/1994	MILL AND OVERLAY W/FABRIC
2027	CLAREMONT BLVD	BELROSE AVE	CLAREMONT	C	Light Mtce	$ 38,772		8	N	4,C	0.17	91	10/10/2016	RECONSTRUCT
2027	DELAWARE ST	6TH ST	9TH ST	C	Heavy Mtce	$ 117,147		1	Y	N	0.18	71	12/1/2017	SLURRY SEAL
2027	DELAWARE ST	9TH ST	SAN PABLO AVE	C	Heavy Mtce	$ 93,887		1	Y	2A	0.13	73		
2027	DERBY ST	COLLEGE AVE	PIEDMONT AVE	R	Heavy Rehab	$ 268,765		8	N	3E	0.12	31	8/1/1996	MILL AND OVERLAY W/FABRIC
2027	DERBY ST	PIEDMONT AVE	WARRING ST	R	Heavy Rehab	$ 114,903		8	N	3E	0.06	27	N/A	
2027	DERBY ST	WARRING ST	BELROSE AVE &	A	Light Mtce	$ 59,940		8	N	4*,C	0.23	90	10/10/2016	RECONSTRUCT
2027	DWIGHT WAY	MILVIA WAY	SHATTUCK AVE	A	Heavy Mtce	$ 80,940		4	N	C	0.13	55	12/10/1998	MILL AND OVERLAY W/FABRIC
2027	DWIGHT WAY	SHATTUCK AVE	FULTON ST	A	Light Mtce	$ 32,000		4	N	N	0.11	86	6/27/2013	MILL AND OVERLAY
2027	DWIGHT WAY	FULTON ST	DANA ST	A	Light Mtce	$ 70,667		47	N	N	0.25	84	6/27/2013	MILL AND OVERLAY
2027	DWIGHT WAY	DANA ST	TELEGRAPH	A	Heavy Mtce	$ 85,296		7	N	C	0.13	75	6/27/2013	MILL AND OVERLAY
2027	DWIGHT WAY	TELEGRAPH AVE	BOWDITCH ST	A	Light Mtce	$ 31,680		78	N	N	0.13	80	8/7/2015	MILL AND OVERLAY
2027	DWIGHT WAY	BOWDITCH ST	COLLEGE AVE	A	Light Mtce	$ 31,680		78	N	N	0.13	87	8/7/2015	MILL AND OVERLAY
2027	DWIGHT WAY	COLLEGE AVE	PIEDMONT AVE	A	Light Mtce	$ 37,200		78	N	N	0.15	87	8/30/2015	MILL AND OVERLAY
2027*	FOREST AVE	COLLEGE AVE	CLAREMONT BLVD	R	Heavy Rehab	$ 618,000		8	N	N	0.36	45	8/1/1996	RECONSTRUCT STRUCTURE (AC)
2027	FRANCISCO ST	SAN PABLO AVE	CHESTNUT ST	R	Reconstruct	$ 760,933		1	N	N	0.26	17	8/1/1993	RECONSTRUCT SURFACE
2027	FRANCISCO ST	CHESTNUT ST	DEAD END	R	Reconstruct	$ 629,733		1	N	N	0.21	24	7/1/1995	MILL AND OVERLAY W/FABRIC
2027	GRANT ST	NORTH END	ROSE ST	R	Heavy Rehab	$ 99,393		5	N	3C	0.06	48	6/1/1995	MILL AND OVERLAY W/FABRIC
2027	GRANT ST	ROSE ST	CEDAR ST	R	Heavy Mtce	$ 136,806		5	N	3C	0.25	61	6/1/1995	MILL AND OVERLAY W/FABRIC
2027	GRANT ST	CEDAR ST	LINCOLN ST	R	Light Rehab	$ 66,337		1	N	3C	0.06	55	7/22/1997	MILL AND THICK OVERLAY
2027	GRANT ST	LINCOLN ST	VIRGINIA ST	R	Heavy Rehab	$ 114,593		1	N	3C	0.06	47	7/22/1997	MILL AND THICK OVERLAY
2027	GRANT ST	VIRGINIA ST	FRANCISCO ST	R	Reconstruct	$ 232,801		1	N	3C	0.06	24	7/22/1997	MILL AND THICK OVERLAY
2027	GRANT ST	FRANCISCO ST	OHLONE PARK	R	Light Mtce	$ 42,680		1	N	3C	0.10	97	10/11/2019	MILL AND THICK OVERLAY
2027	GRANT ST	HEARST AVE	UNIVERSITY	R	Heavy Mtce	$ 72,354		1	N	3C	0.11	63	12/15/2004	RECONSTRUCT SURFACE
2027	GRANT ST	UNIVERSITY AVE	ADDISON ST	R	Light Mtce	$ 24,700		4	N	3C	0.06	90	12/15/2004	RECONSTRUCT STRUCTURE
2027	GRANT ST	ADDISON ST	ALLSTON WAY	R	Heavy Rehab	$ 260,686		4	N	3C	0.13	37	9/13/2000	MEDIUM AC OVERLAY
2027	GRANT ST	ALLSTON WAY	BANCROFT WAY	R	Light Mtce	$ 37,432		4	N	3C	0.13	85	12/15/2004	RECONSTRUCT STRUCTURE
2027	GRANT ST	BANCROFT WAY	CHANNING WAY	R	Heavy Rehab	$ 262,552		4	N	3C	0.13	41	9/13/2000	MEDIUM AC OVERLAY
2027	GRANT ST	CHANNING WAY	DWIGHT WAY	R	Light Mtce	$ 31,246		4	N	3C	0.13	77	12/15/2004	RECONSTRUCT STRUCTURE

Note: Column P denotes presence of bike facility type (1 paved path, 2A 2B bike lane, 3A sign-only, 3C Sharrows, 3E bike blvd, 4 cycle track); C for bus route; VZ for Vision Zero; and N for none.

Proposed bike facilities from 2017 Bike Plan.

5-YEAR STREET REHABILITATION PLAN FOR FY 2024 TO FY 2028

Revised: 10/31/2023

Fiscal Year	Street Name	From	To	Class	Treatment (from StreetSaver)	Updated Total Cost	MRP Reqt	District	Equity Zone	P	Mileage	Current PCI	Last M&R Date	Last Paved
2027	HEARST AVE	SACRAMENTO	CALIFORNIA ST	C	Heavy Mtce	$ 55,200		1	N	VZ	0.11	61	8/14/2015	FIBER MICROSURFACING
2027	HEARST AVE	CALIFORNIA ST	MC GEE AVE	C	Heavy Mtce	$ 84,120		1	N	4*,VZ	0.13	65	8/14/2015	FIBER MICROSURFACING
2027	HEARST AVE	MC GEE AVE	MARTIN	C	Heavy Mtce	$ 171,460		1	N	4*,VZ	0.26	64	8/14/2015	FIBER MICROSURFACING
2027	PIEDMONT AVE	AT END OF	BANCROFT WAY	C	Heavy Mtce	$ 110,193		7	N	2A,C,VZ	0.14	68	10/1/2012	RECONSTRUCT STRUCTURE
2027	PIEDMONT AVE	BANCROFT WAY	DWIGHT WAY	C	Light Mtce	$ 126,147		7	N	4,C,VZ	0.26	68	8/17/2006	RECONSTRUCT STRUCTURE
2027	PIEDMONT AVE	DERBY ST	STUART ST	R	Heavy Rehab	$ 290,646		8	N	3C	0.16	41	7/8/2003	RECONSTRUCT SURFACE
2027	PIEDMONT AVE	STUART ST	RUSSELL ST	R	Light Rehab	$ 120,128		8	N	3C	0.09	54	7/8/2003	RECONSTRUCT SURFACE
2027	PIEDMONT AVE	RUSSELL ST	ASHBY AVE	R	Light Rehab	$ 83,717		8	N	N	0.06	76	12/15/2004	RECONSTRUCT SURFACE
2027	PIEDMONT CRESCENT	DWIGHT WAY	WARRING ST	C	Light Mtce	$ 19,133		8	N	3C,C,VZ	0.05	91	10/10/2016	RECONSTRUCT
2027	VIRGINIA ST	2ND ST	6TH ST	R	Heavy Rehab	$ 460,250		1	Y	3E	0.25	35	N/A	
2027	VIRGINIA ST	6TH ST	SAN PABLO AVE	R	Heavy Rehab	$ 543,500		1	Y	3E	0.31	33	4/1/2001	MILL AND OVERLAY W/FABRIC
2027	WARRING ST	DWIGHT WAY	DERBY ST	C	Light Mtce	$ 76,617		8	N	3C,C,VZ	0.29	90	10/10/2016	RECONSTRUCT
2027	WOOLSEY ST	COLLEGE AVE	CLAREMONT AVE	R	Reconstruct	$ 851,400	Y	8	N	3A/3C	0.24	29	N/A	
2027	UTILITY					$ 1,000,000								
	CONTINGENCY					$ 1,587,644								
	MRP REQUIREMENTS					$ 1,500,000								
					20189151	$19,964,080					10.02			
						50%		bike/ped						
* in Fiscal Year column denotes coordination with EBMUD project						59%		bike/ped not incl contingency						

FISCAL YEAR 2027 TOTALS

Total Estimated Cost and Miles $19,964,080 10.02 miles

	Mileage	Estimated Cost	% Cost	% Mileage
Arterials	1.25	$429,403	3%	12%
Collectors	3.28	$5,112,054	30%	33%
Residentials	5.48	$10,334,979	61%	55%
Bikeways	6.83	$9,874,389	59%	68%
Curb Ramps		$648,000	4%	
Total		$10,522,389	62%	
Equity Zone	2.54	$5,652,899	33%	25%
Equity Zone w/Arterials	2.54	$5,652,899	33%	25%

District	Cost	Miles	Cost w/o Arterials	Miles w/o Arterials
1	$7,883,113	3.90	$7,883,113	3.90
2	$0	0.00	$0	0.00
3	$0	0.00	$0	0.00
4	$846,549	1.18	$698,276	0.80
5	$236,199	0.31	$236,199	0.31
6	$0	0.00	$0	0.00
7	$1,493,217	1.73	$1,322,308	1.28
8	$5,417,359	2.90	$5,307,139	2.48
	$15,876,436	10.02	$15,447,033	8.77

Note: Column P denotes presence of bike facility type (1 paved path, 2A 2B bike lane, 3A sign-only, 3C Sharrows, 3E bike blvd, 4 cycle track); C for bus route; VZ for Vision Zero; and N for none.

Proposed bike facilities from 2017 Bike Plan.

Fiscal Year	Street Name	From	To	Class	Treatment (from StreetSaver)	Updated Total Cost	MRP Reqt	District	Equity Zone	P	Mileage	Current PCI	Last M&R Date	Last Paved
2028	5TH ST	UNIVERSITY AVE	DWIGHT WAY	R	Reconstruct	$ 1,852,471	Y	2	Y	N	0.57	23	11/1/1990	MILL AND THIN OVERLAY
2028	7TH ST	UNIVERSITY AVE	BANCROFT WAY	R	Reconstruct	$ 1,137,520	Y	2	Y	N	0.32	28	8/28/1997	MILL AND OVERLAY W/FABRIC
2028	7TH ST	BANCROFT WAY	DWIGHT WAY	R	Heavy Rehab	$ 431,600		2	Y	N	0.25	32	11/1/1990	MILL AND THIN OVERLAY
2028	7TH ST	DWIGHT WAY	GRAYSON ST	C	Heavy Mtce	$ 193,210		1	N	C	0.35	69	7/7/2008	MILL AND THICK OVERLAY
2028	7TH ST	GRAYSON ST	HEINZ AVE	C	Heavy Mtce	$ 76,700		1	N	C	0.13	74	7/7/2008	MILL AND THICK OVERLAY
2028	7TH ST	HEINZ AVE	ASHBY AVE	C	Light Mtce	$ 57,622		1	N	C	0.19	78	10/23/2003	MILL AND THICK OVERLAY
2028	10TH ST	CARLETON ST	HEINZ AVE	R	Reconstruct	$ 916,160	Y	2	Y	N	0.26	16	6/15/2000	RECONSTRUCT SURFACE
2028	CURTIS ST	UNIVERSITY AVE	DWIGHT WAY	R	Reconstruct	$ 2,009,440	Y	2	Y	N	0.57	9	8/18/1997	MILL AND THICK OVERLAY
2028	FRANCISCO ST	MARTIN LUTHER	MILVIA ST	R	Reconstruct	$ 451,520		4	N	N	0.13	24	10/1/1995	RECONSTRUCT SURFACE
2028	FRANCISCO ST	MILVIA ST	SHATTUCK AVE	R	Reconstruct	$ 463,520		4	N	N	0.13	25	10/1/1995	RECONSTRUCT SURFACE
2028	FULTON ST	KITTREDGE ST	BANCROFT WAY	A	Heavy Mtce	$ 83,971		47	N	4*	0.06	77	9/13/2002	RECONSTRUCT STRUCTURE
2028	GRANT ST	DWIGHT WAY	OREGON ST	R	Heavy Rehab	$ 876,506		34	Y	3C	0.43	31	7/1/1993	RECONSTRUCT SURFACE
2028	GRANT ST	NORTH END	RUSSELL ST	R	Heavy Rehab	$ 62,849		3	Y	3C	0.04	37	6/1/1995	MILL AND OVERLAY W/FABRIC
2028	KITTREDGE ST	MILVIA ST	SHATTUCK AVE	R	Heavy Rehab	$ 225,600		4	N	N	0.13	40	9/1/1984	SLURRY SEAL
2028	OXFORD ST	HEARST AVE	BERKELEY WAY	A	Light Mtce	$ 41,293		47	N	4*	0.05	80	9/13/2002	RECONSTRUCT STRUCTURE
2028	OXFORD ST	BERKELEY WAY	UNIVERSITY	A	Heavy Mtce	$ 82,005		47	N	4*	0.06	71	9/13/2002	RECONSTRUCT STRUCTURE
2028	OXFORD ST	UNIVERSITY AVE	ADDISON ST	A	Heavy Mtce	$ 81,816		47	N	4*	0.07	74	9/13/2002	RECONSTRUCT STRUCTURE
2028	OXFORD ST	ADDISON ST	KITTREDGE ST	A	Heavy Mtce	$ 258,487		47	N	4*	0.19	77	9/13/2002	RECONSTRUCT STRUCTURE
2028	SHATTUCK AVE	WARD ST	ASHBY AVE	C	Heavy Mtce	$ 181,709		3	N	4,C,VZ	0.29	58	11/24/2008	MILL AND THICK OVERLAY
2028	STUART ST	SACRAMENTO ST	MARTIN LUTHER KING	R	Reconstruct	$ 1,601,680	Y	3	Y	N	0.46	19	9/1/1993	RECONSTRUCT SURFACE
2028	UNIVERSITY AVE	6TH ST	SAN PABLO AVE	A	Heavy Mtce	$ 368,694		12	Y	4,C,VZ	0.31	66	9/1/2009	RECONSTRUCT STRUCTURE
2028	UNIVERSITY AVE	SAN PABLO AVE	SACRAMENTO	A	Heavy Mtce	$ 613,793		12	Y	4,C,VZ	0.56	55	11/25/2009	RECONSTRUCT STRUCTURE
2028	UNIVERSITY AVE	SACRAMENTO	MCGEE AVE	A	Heavy Mtce	$ 292,502		14	N	4,C,VZ	0.25	70	6/10/2010	RECONSTRUCT STRUCTURE
2028	UNIVERSITY AVE	MCGEE AVE	MARTIN	A	Heavy Mtce	$ 253,508		14	N	4,C,VZ	0.25	68	9/30/2010	RECONSTRUCT STRUCTURE
2028	VIRGINIA ST	MARTIN LUTHER	MILVIA ST	R	Heavy Mtce	$ 54,400		4	N	3E	0.13	71	6/30/2010	MILL AND THIN OVERLAY
2028	VIRGINIA ST	MILVIA ST	SHATTUCK AVE	R	Light Mtce	$ 19,680		4	N	3E	0.12	81	6/30/2010	MILL AND THIN OVERLAY
2028	VIRGINIA ST	SHATTUCK AVE	SPRUCE ST	R	Light Rehab	$ 250,000		46	N	3E	0.19	64	9/13/2002	MILL AND OVERLAY W/FABRIC
2028	VIRGINIA ST	SPRUCE ST	ARCH ST	R	Heavy Mtce	$ 66,000		6	N	3E	0.09	66	9/13/2002	MILL AND OVERLAY W/FABRIC
2028	VIRGINIA ST	ARCH ST	EUCLID AVE	R	Heavy Mtce	$ 132,800		6	N	3E	0.20	65	9/13/2002	MILL AND OVERLAY W/FABRIC
2028	WARD ST	ACTON ST	SACRAMENTO ST	R	Reconstruct	$ 476,912		2	Y	N	0.14	14	9/1/1993	RECONSTRUCT SURFACE
2028	WARD ST	SACRAMENTO ST	MARTIN LUTHER KING	R	Reconstruct	$ 1,622,672	Y	3	Y	N	0.46	22	9/1/1993	RECONSTRUCT SURFACE
2028	UTILITY COORDINATION					$ 700,000								
	CONTINGENCY					$ 1,523,664								
	MRP REQUIREMENTS					$ 3,000,000								
					20473590	$20,460,304					7.35			
						18%		bike/ped						
						23%		bike/ped not incl contingency						

Note: Column P denotes presence of bike facility type (1 paved path, 2A 2B bike lane, 3A sign-only, 3C Sharrows, 3E bike blvd, 4 cycle track); C for bus route; VZ for Vision Zero; and N for none.

Proposed bike facilities from 2017 Bike Plan.

5-YEAR STREET REHABILITATION PLAN FOR FY 2024 TO FY 2028

Revised: 10/31/2023

Fiscal Year	Street Name	From	To	Class	Treatment (from StreetSaver)	Updated Total Cost	MRP Reqt	District	Equity Zone	P	Mileage	Current PCI	Last M&R Date	Last Paved

FISCAL YEAR 2028 TOTALS

Total Estimated Cost and Miles $20,460,304 7.35 miles

	Mileage	Estimated Cost	% Cost	% Mileage
Arterials	1.80	$2,076,069	13%	20%
Collectors	0.96	$509,241	3%	10%
Residentials	4.59	$12,651,330	80%	50%
Bikeways	3.28	$3,720,013	23%	36%
Curb Ramps		$546,000	3%	
Total		$4,266,013	27%	
Equity Zone	3.48	$10,987,810	69%	38%
Equity Zone w/Arterials	4.35	$11,970,296	75%	47%

District	Cost	Miles	Cost w/o Arterials	Miles w/o Arterials
1	$1,091,780	1.36	$1,091,754	0.67
2	$7,315,346	2.53	$6,824,103	2.10
3	$3,907,163	1.45	$3,907,163	1.45
4	$2,324,764	1.41	$1,777,973	0.94
5	$0	0.00	$0	0.00
6	$323,800	0.38	$323,800	0.38
7	$273,786	0.22	$0	0.00
8	$0	0.00	$0	0.00
	$15,236,640	7.35	$13,924,793	5.54

Note: Column P denotes presence of bike facility type (1 paved path, 2A 2B bike lane, 3A sign-only, 3C Sharrows, 3E bike blvd, 4 cycle track); C for bus route; VZ for Vision Zero; and N for none.

Proposed bike facilities from 2017 Bike Plan.

Fiscal Year	Street Name	From	To	Class	Treatment (from StreetSaver)	Updated Total Cost	MRP Reqt	District	Equity Zone	P	Mileage	Current PCI	Last M&R Date	Last Paved

FISCAL YEAR 2024-2028 TOTALS

Total Estimated Cost and Miles $91,919,259 46.73 miles

	Mileage	Estimated Cost	% Cost	% Mileage
Arterials	10.87	$12,971,740	15%	23%
Collectors	13.52	$12,820,770	15%	29%
Residentials	22.34	$49,131,362	57%	48%
Bikeways	23.30	$29,758,005	34%	50%
Curb Ramps		$2,430,000	3%	
Total		$32,188,005	37%	
Equity Zone	15.09	$39,100,716	45%	32%
Equity Zone w/Arterials	18.83	$42,687,011	49%	40%

District	Cost	Miles	Cost w/o Arterials	Miles w/o Arterials
1	$17,851,317	9.84	$16,772,694	8.45
2	$24,197,836	10.53	$22,561,018	8.44
3	$7,906,100	4.23	$7,757,118	3.69
4	$8,016,965	5.03	$3,645,848	2.38
5	$3,965,575	5.79	$2,682,345	4.01
6	$4,564,992	5.96	$4,564,992	5.96
7	$3,003,729	2.45	$1,322,308	1.28
8	$5,417,359	2.90	$5,307,139	2.48
	$74,923,872	46.73	$64,613,462	36.69

Total Funding $91,919,259

Note: Column P denotes presence of bike facility type (1 paved path, 2A 2B bike lane, 3A sign-only, 3C Sharrows, 3E bike blvd, 4 cycle track); C for bus route; VZ for Vision Zero; and N for none.

Proposed bike facilities from 2017 Bike Plan.

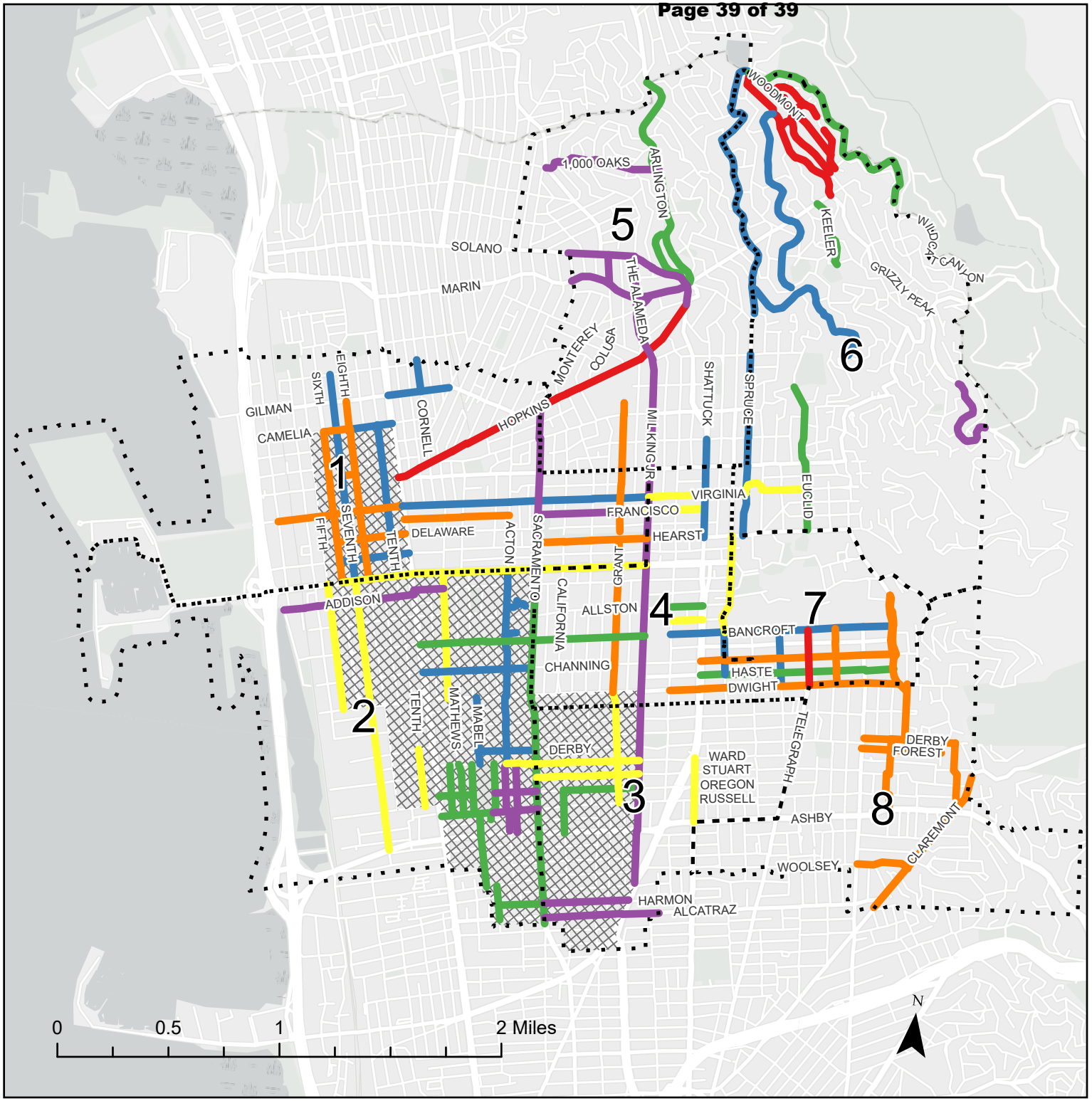

EXHIBIT B
PAVING PLAN
FY 24-28

Planned Fiscal Year

- 2023 Holdover
- 2024
- 2025
- 2026
- 2027
- 2028
- Council Districts
- Equity Zone

This map is for reference purposes only.

Care was taken in the creation of this map, but it is provided "AS IS". Please contact the City of Berkeley to verify map information or to report any errors.
November 6, 2023

CITY OF BERKELEY
Engineering Division
1947 Center Street
Berkeley CA 94704

07

Ben Bartlett
Councilmember District 3

CONSENT CALENDAR
May 7, 2024

To: Honorable Mayor and Members of the City Council

From: Councilmember Bartlett (Author)

Subject: EVITP (Electric Vehicle Infrastructure Training Program) Ordinance

RECOMMENDATION

That the Berkeley Mayor and Members of City Council establish an EVITP (Electric Vehicle Infrastructure Training Program) ordinance to address increasing safety and fire concerns. The ordinance would require 50% of electricians per job installing and maintaining city-funded EVSE (Electric Vehicle Supply Equipment) equipment and infrastructure to be certified by EVITP.

CURRENT SITUATION -

There have been increasing safety concerns with electric vehicle charging stations and electric vehicle supply equipment (EVSE), mainly fires attributed to larger batteries and charging needs. These batteries put stress on existing electrical systems, whose capacities, if surpassed or not properly addressed in EV installation, could cause large, damaging home or industrial fires.[1]

Many car makers including Chevrolet, General Motors, Audi, and Hyundai have recalled their electric vehicles. Chevrolet recalled over 60,000 Bolt EVs due to possible spontaneous combustions.[2] Electric, battery-powered vehicles and gasoline cars have similar risks for fire incidents. However, EV fires last longer, are more intense, and burn hotter due to the lithium-ion batteries, which exacerbate the fire.[3]

To address this safety concern, an EVITP ordinance would require all electricians installing EVSE contracted or funded by city-funds to be certified by EVITP (Electric Vehicle Infrastructure Training Program). The program requires electricians to complete the 20 hour course and pass a proctored exam.

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[1] "The Future of EV Charging Station Safety". *HSE Network.* 13 April 2023. https://www.hse-network.com/the-future-of-ev-charging-station-safety/.

[2]Siddiqui, Faiz. "While they were asleep, their Teslas burned in the garage. It's a risk many automakers are taking seriously". *The Washington Post.* 4 April 2021. https://www.washingtonpost.com/technology/2021/08/04/tesla-fire/

[3] Siddiqui, Faiz. "While they were asleep, their Teslas burned in the garage. It's a risk many automakers are taking seriously". *The Washington Post.* 4 April 2021. https://www.washingtonpost.com/technology/2021/08/04/tesla-fire/

To ensure fires do not start due to overheating, electricians need to ensure buildings' electric systems can handle the power and charging needs demanded by electric vehicles' large batteries. This can be taught with the proper training such as site assessment and load calculations including counting all electoral loads, adding a margin of safety, and looking at equipment conditions. These techniques, steps, and knowledge are all taught in the EVITP program. This course ensures the safety of the EV users as well as the safety of electricians installing the charging stations.

BACKGROUND

EVTIP is a non-profit, volunteer, brand neutral, national EV industry collaborative training and certification program launched in 2012 to address the technical requirements, safety imperatives, and performance integrity of industry partners and stakeholders of the EV industry. This training program is open to certified electricians providing the knowledge to safely install Electric Vehicle Supply Equipment (EVSE), which supplies electricity to an electric vehicle (EV). The curriculum includes training for Residential, Commercial, Industrial Charging Infrastructure. The modules cover vehicle, EV supply equipment, National Electrical Code (NEC), site assessment, load calculations based on NEC, commissioning and working with municipalities and utilities/customer interface, troubleshooting/maintenance, and a comprehensive proctored exam. EVTIP's course is a total of 20 hours and open only to certified electricians. The program is designed to provide the advanced knowledge and experience that electricians need for safe EVSE and installation. The program costs an electrician a total of $275, which includes the instruction, quizzes, exam proctoring, certification, record keeping, website, certification verification, maintenance and administration.[4] This is comparably lower due to the volunteer basis of the organization and low administrative costs. The program requires you to renew your certification every 3 years to account for the updates and changes in the industry and curriculum.

A number of counties and cities have implemented similar policies or safety practices including Maywood,[5] Petaluma,[6] Rohnert Park,[7] and Carson.[8]

REVIEW OF EXISTING PLANS, PROGRAMS, POLICIES, AND LAWS

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[4] "Apply for Training". Electric Vehicle Infrastructure Training Program (EVITP). https://evitp.org/training/

[5] "Resolution NO. 6174". City Council of the City of Maywood. 2021. https://www.cityofmaywood.com/DocumentCenter/View/838/Reso-No-6174---Adopting-an-Electric-Vehicle-Infrastructure-Training-Program-Policy

[6] "17.12.060 Electric vehicle charging station installation requirements". City of Petaluma. https://petaluma.municipal.codes/Code/17.12.060

[7] https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_3037789/File/City%20Clerk/Other%20Notices/Ordinance%20968%20For%20Website%20(Pre-adoption).pdf

[8] "CONSIDER ELECTRICAL VEHICLE INFRASTRUCTURE TRAINING PROGRAM (EVITP) CERTIFICATION REQUIREMENT FOR CITY PROJECTS (CITY COUNCIL)". City of Carson, California. 2020. https://carson.legistar.com/LegislationDetail.aspx?ID=4669964&GUID=8A8147FE-247E-4956-8340-10DC3E76C09A&Options=&Search=

There are currently laws and policies in place, primarily at a state level, that relate to the topic of EVSE installation and infrastructure. First, Assembly Bill 841 added section 740.20 to the California Public Utilities Code requiring that all EV charging stations funded or authorized by the California Public Utilities Commission (CPUC), the California Energy Commission (CEC), or the state board, must be installed by a licensed contractor. Additionally, each installation must have an electrician with an EVITP certification.[9]

Secondly, California Assembly Bill 1236 requires cities and counties to create and adopt an ordinance that creates a streamlined and expedited process to approve and permit EV charge stations.[10]

Lastly, the National Electric Vehicle Infrastructure (NEVI) Formula Program[11], funded by the Department of Energy and the Department of Transportation, requires all electricians installing, maintaining, and operating EVSE to be EVITP certified.[12]

RATIONALE FOR RECOMMENDATION

Both the State of California and the City of Berkeley are pursuing electrification as a response to the climate emergency. The California State Senate passed Assembly Bill 841, which established that "widespread transportation electrification is needed to achieve the goals of the Charge Ahead California Initiative."[13]

Berkeley has also prioritized EVSE access and electrification through agreements and licenses to build more EV Charging Stations[14] and networks.[15]

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[9] "Electric Vehicle (EV) Charging Station Certification and Training Requirements". U.S. Department of Energy. 2020. https://afdc.energy.gov/laws/12726

[10]"Permitting Electric Vehicle Charging Stations: Best Practices". California Governor's Office of Business And Economic Development. https://business.ca.gov/industries/zero-emission-vehicles/plug-in-readiness/permitting-electric-vehicle-charging-stations-best-practices/

[11]"FACT SHEET: Biden-Harris Administration Announces New Standards and Major Progress for a Made-in-America National Network of Electric Vehicle Chargers". The White House. 15 February 2023. https://www.whitehouse.gov/briefing-room/statements-releases/2023/02/15/fact-sheet-biden-harris-administration-announces-new-standards-and-major-progress-for-a-made-in-america-national-network-of-electric-vehicle-chargers/

[12]"National Electric Vehicle Infrastructure Formula Program". Federal Register The Daily Journal of the United States Government. 22 June 2022. https://www.federalregister.gov/documents/2022/06/22/2022-12704/national-electric-vehicle-infrastructure-formula-program

[13] "AB-841 Energy: transportation electrification: energy efficiency programs: School Energy Efficiency Stimulus Program". California Legislative Information. 2 October 2020. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB841

[14] Resolution; City Council; 66189; License Agreement: City CarShare for Electric Vehicle Charging in City Parking Garages and Lots- berkeley

[15] Williams-Ridley. "Contract No. 9893B Amendment: ABM Industries for Expanding Electric Vehicle Charging Station Operations and Extended Maintenance Program". City of Berkeley. 10 December 2019. https://berkeleyca.gov/sites/default/files/documents/2019-12-10%20Item%2018%20Contract%20No.%209893B%20Amendment.pdf

This policy would help address the climate emergency by promoting safe, accessible electrification and EVSE access.

IMPLEMENTATION, ADMINISTRATION AND ENFORCEMENT

An EVITP ordinance for the installation or maintenance of city-funded EVSE equipment requires low administrative costs. Confirming whether electricians are EVITP certified can be easily done on the EVITP website.

ENVIRONMENTAL SUSTAINABILITY

This policy would decrease carbon emissions and pollution by promoting the safety and social acceptance of electrical vehicles through safe EV charging stations.

FISCAL IMPACTS

The ordinance could prevent fires that would possibly require significant damage and repair costs.

CONTACT PERSON

Councilmember Ben Bartlett: 510-981-7130
James Chang 510-981-7131

ATTACHMENTS AND MATERIALS

1. Draft Ordinance

A ORDINANCE OF THE CITY OF BERKLEY CITY COUNCIL ADOPTING AN ELECTRIC VEHICLE INFRASTRUCTURE TRAINING PROGRAM (EVITP) POLICY FOR THE INSTALLATION AND MAINTENANCE OF CITY-FUNDED ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

WHEREAS, the City of Berkeley would like to promote safety and pursue electrification to combat the climate emergency; and

WHEREAS, the Electric Vehicle Infrastructure Training Program (EVITP) is a non-profit, industry wide, brand neutral, volunteer staffed collaborative; and

WHEREAS, EVITP provides the training and certification for state-certified electricians to safely install electric vehicle (EV) charging infrastructure; and

WHEREAS, California State Assembly Bill 841 requires each EV charging station installation to have an EVITP certified electrician; and

NOW, THEREFORE, BE IT ORDAINED by the Council of the City of Berkeley as follows:

SECTION 1. The above recitals are hereby declared to be true and correct and are incorporated into this ordinance as findings of the City Council.

SECTION 2. The City hereby adopts the policy that all of the installation, commissioning, and maintenance of electric vehicle charging stations, equipment and related infrastructure (the "EV work") which are constructed with funds provided in whole or in part by the City of Berkeley, or are constructed with funds in whole or in part which are approved and or administered by the City of Berkeley shall be performed in accordance with the following requirements

a. The contractor shall have an active California C-10 electrical contractor's license, be approved with the EVITP program
b. At a minimum, one job-site supervisor or job-site foreman supervising the EV work at each job site shall hold EVITP certification and be a licensed electrician
c. A minimum of fifty percent of the licensed electricians performing the EV work on each job site shall hold EVITP certification

SECTION 3. Contractors performing EV Work shall maintain a written or electronic record of all EV Work including the names of all EVITP electrician(s) who performed the EV Work. Said record shall be made available to EVITP, and/or City of Berkeley upon request.

SECTION 4. This Ordinance shall become effective immediately upon its adoption

SECTION 5. The City Clerk is directed to certify the adoption of this Ordinance.